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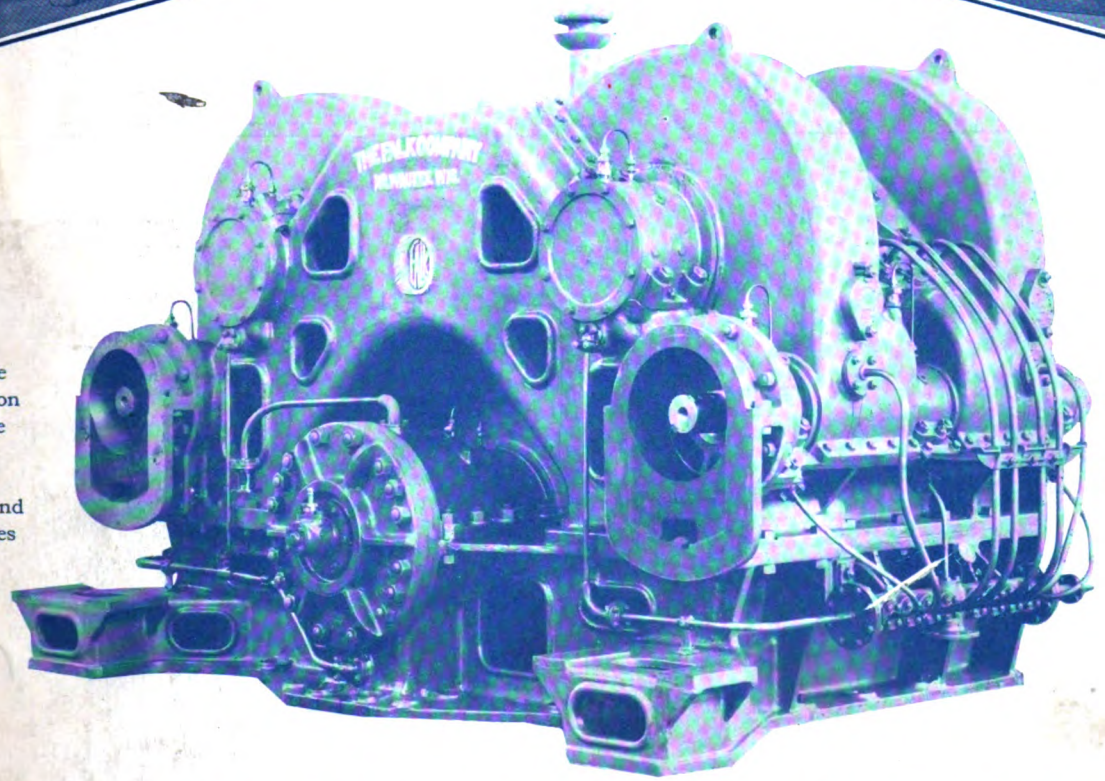

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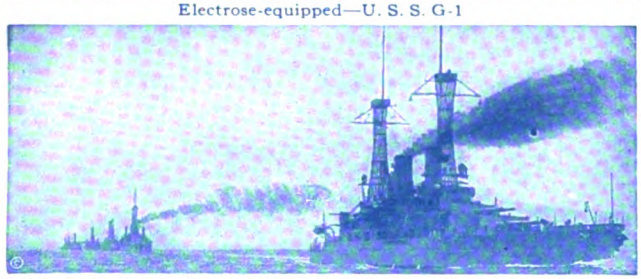

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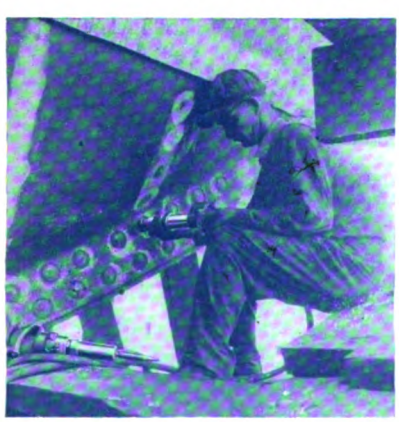

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THE MARINE REVIEW

VOL. 50 NEW YORK · JUNE, 1920 CLEVELAND No. 6

Vessel Sales Can Be Financed

Disposal of Government Ships to Private Investors Made Easier by Recent Developments—Initial Payment Is Comparatively Small

MARINE securities, judging from a variety of comments in past years, have not been respectable enough to get past the bank doorman. They have been like the foundling in the basket on the doorstep—only the door led to a "no children allowed" apartment house instead of to a charitable orphanage. But the mystery always remained unsolved why this class of investments, shunned in the east, was ranked among the best along the lakes. Ships built both for lake and ocean service have been bonded and the bonds sold without difficulty.

But marine issues now are gaining favor at a time when some of their competitors are running into heavy weather. During the past months of tightening credit, the shipping board has met greater success in selling its vessels. While this is due partially to an evidently more sincere attempt to regard private ownership as something more than a phrase, the evidence is clear that financing these ship purchases has been easier.

Plan for Selling the Ships

Business men in outside industries, called together by the new head of the shipping board to submit collective judgment on the best method of selling the great federal fleet, have approved a plan of sale which probably will be adopted as standard by the board. This plan sets the principle that in fixing prices, allowance must be made for exaggerated war costs and the basis established on the present domestic and foreign level of reproduction. Stability of prices is urged, either through assurance that quotations will be maintained for a definite and long period or through giving protection to buyers in case of later price adjustment to a lower level.

Terms recommended for selling the ships are 10 per cent on delivery, 5 per cent semiannually for three years, making a total of 40 per cent at the end of the third year; the balance of 60 per cent to be paid in 12 equal, annual installments. Supervision of earnings, adequate return on actual capital invested, use of excess earnings in anticipating payments and application of capital payments to the government in redeeming Liberty bonds and Victory Loan notes, are also recommended.

Terms offered purchasers of government vessels have steadily grown more liberal, an excellent means of encouraging investment but losing efficiency since buyers naturally hesitated to adopt today's plan when a competitor might obtain better terms tomorrow. Stability of price and terms is the first essential action the shipping board must take in carrying on its sales of ships—which according to the merchant marine bill now before congress is to be its constant aim.

Amount of Investment Required

Ship construction plans of the government are finally approaching completion. Private information shows the program was 91 per cent complete on April 24, when 24 more keels remained to be laid, a total of 25,900 deadweight tons; 179 ships were yet to be launched, a total of 1,604,775 tons and 364 ships were still to be delivered, representing 2,715,776 tons. On a war cost level, the government's fleet, counting all ships wooden or otherwise, would call for the investment of close to $3,000,000,000, or a down payment of $300,000,000. No one expects full return of the war cost on the better class of ships and hopes are held that the wooden and smaller steel ships may find a market abroad. As a result, investment of $100,000,000 in initial payments would move the great fleet from the hands of the government to those of private owners.

Evidences are that the average American vessel now is earning $3.50 per ton monthly, a fact which made the $5 a ton monthly payment plan a continuous call for new capital. With an assurance of earnings, with congress for the first time pledging the nation to a constructive marine policy and with all groups backing the bill now before the senate, the American public can be relied upon to furnish the savings to buy quickly and operate successfully its new vehicle for world trade.

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World Charter Market Reviewed by

RATES STAY UP

Quotations Hold Firm but Railroad Strike Is Proving Blow to Trade—Time Charters Sag to Lower Level

MAY day brought no gay celebration to the steamship companies. Following the great slump in exchange, strikes greatly reduced production and no sooner had a semblance of adjustment been effected in the industrial lines than the "outlaw" railway strike began. Throughout the month of April, steamships crowded American ports unable to obtain cargoes. A slight betterment in the land movement was noticeable by the first of May but at that time the steamship owners themselves were confronted with new demands by their seamen. Throughout this trying time, the lines were harassed with demands for lower rates. The shipping board formally turned over the rate making power to the private operators and that was a signal for freight forwarders to start a movement for lower ocean charges. This agitation was abetted by propaganda from England which continued to forecast a great reduction in rates. And May opened with a paucity of shipments which was discouraging to say the least. The forwarders announced that only essential commodities would be moved and everything that could be held would be delayed pending forthcoming rate reductions which they anticipated.

Germans Seek Ship Agreement

American steamship owners were not only confronted with these actual problems but have been compelled to combat the more insidious rumors and political movements which are feared as detrimental to the best interests of the merchant marine. It was learned that the Hamburg-American interests endeavored to prevent the American line obtaining a suitable berth in Hamburg. The American Steamship Owners' association petitioned the shipping board to establish American agencies in Germany and other ports. Despite this, representatives of the old German line came on to Washington for a conference with government officials in the endeavor to enter into an agreement which would insure the continued life of the enemy company. Undoubtedly some Americans have been aiding the German steamship officials in this controversy which has been marked by a back fire against one firm bringing up again the rumor that an investigation of this company's ownership would be made.

Some persons have undoubtedly been playing upon the alleged hostility toward Englishmen which Chairman Benson of the shipping board is claimed to hold. They were given no little satisfaction in the supposed display of that hostility when Benson curtly wrote the United States Steel Corp. to cease favoring English flag ships. The shipping board charged that the Steel corporation would book freight only on ships which would produce through bills of lading with ocean rates omitted. The American law compels American ships to state the ocean rates whenever a through bill is issued. Chairman Gary promptly issued instructions that any discrimination against American ships would not be allowed.

But Chairman Benson has persisted in holding to a middle course. While he may have desired to rebuke an American shipper whom he thought was showing preference for British ships, at the same time he has not fallen into the trap set by the German shipping interests. He has told the German representatives that if they wish to enter into agency agreements for American ships they must make those agreements with the private American steamship companies; the shipping board, as a government agency, would have nothing to do with the matter.

The Benson policy is apparently winning favor despite the fact that it injures the feelings of this or that private shipping interest. Benson is today recognized as a man who is sincerely desirous of giving the American merchant marine the best chance possible, without thought of any one man's personal glory. He has proceeded with his policy of selling government ships where sales are possible under advantageous circumstances. He has proceeded with the reconditioning of the ex-transports, turning them into commercial passenger boats in the navy yards.

Freight Rates Hold Firm

Despite the persistent prophecies contained in English dispatches, freight rates have held firm. Rates from the United Kingdom to the United States westbound increased 25 per cent in April. Just prior to this increase, the British government relinquished its controlled space on British ships, from which it was judged that the commercial rates are about equal to the cost to the government in moving its freight in the controlled manner. Big shippers report that the ocean rate is becoming more stable despite what English steamship men would have the world believe. The shipping board, after deciding not to promulgate any more schedules of rates, took part during the month in a steamship rate conference, leading to the deduction that ocean rates would hereafter be fixed by a pool of operators. At the meeting last month, action was taken to agree that the

Ship Sale Plans

SALE of government vessels under the charter-purchase plan has been abolished by the shipping board. This plan called for 2½ per cent down payment, $5.00 per ton per month until 40 per cent was paid, plus 5 per cent yearly on deferred payments. The balance was to be paid in semiannual installments of 5 per cent. The board has decided to wait for the report of the financial committee appointed at the recent conference with industrial leaders. This report probably will favor the 10 per cent plan, calling for 10 per cent down, 5 per cent every six months for three years, the balance in 12 semiannual installments of 5 per cent each.

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gulf operators shall fix the primary rate on cotton, while the rate from north Atlantic ports will be 25 cents per 100 pounds less, from Norfolk 12½ cents less, and from south Atlantic ports 7½ cents less.

The time charter market has shown a steady fall, with British charters at about 32s, merchants being firm at 30s only. Tonnage has been required for the United States and Canadian rounds at about this rate also. American charterers have been willing to pay $6.50 to $7 for six months' trading, delivery and redelivery United States. One American firm has offered 26s for three years for a British 6000-ton ship, with three months' bank guarantee for hire.

The bunker coal situation has been the most serious obstruction to the movement of ocean commerce. America has been the only market in the world with any semblance of firmness and activity. The increasing demand from all consuming centers for our fuel has afforded this country an unprecedented opportunity to carry on an enormous business. Conditions in some of the foreign ports have been so acute that owners have, in many instances, tied up their vessels rather than operate them at a loss. At some ports bunker cannot be had at any price, while 120s must be paid where it is procurable. Time charters for ships in the coal trade have been prevailing from $1 to $2 above the figures that obtained a month ago.

New South American Services

The sailing of the reconverted ex-Austrian ship, the MARTHA WASHINGTON, from New York for South America marked a great advance in the South American passenger service inaugurated by the shipping board with the assistance of the Munson line. This is the third passenger ship placed in this service. The first, the MOCCASIN, was a failure and this vessel after being further repaired will be put into the Caribbean trade and operated for the board by the New York & Porto Rico Steamship Co. Her name will be changed to PORTO RICO. The second ship assigned to the South American run, the CALLAO, returned from Buenos Aires with a full load and a complete complement of passengers. The operators are apparently well pleased with her record, and are confident that the MARTHA WASHINGTON, largest passenger vessel operated between New York and South America, will prove even more successful. The AEOLUS, the largest of the fleet to be assigned this run, will be ready for service in July, while the HURON, which will be one of the most luxurious liners, will follow the MARTHA WASHINGTON. Later the PRINCESS MATOIKA and the POCAHONTAS will supplement these vessels. Beginning this month, the Munson line will send a vessel every two weeks out of New York on the South American run, missing but one sailing in July. It is understood that the English house of Lamport & Holt plans to meet this competition in a measure and will send a passenger ship in the South American run at equal intervals. By next fall New York will have one sailing every week for Buenos Aires and intermediate ports.

Get Better Dispatch

BETTER dispatch is being obtained by American ships trading to European ports. Shipping board records for March, based on ship movements at Liverpool, Antwerp, Hamburg and Marseilles, show that American vessels at those ports had an average turnaround of 32, 9.3, 8.1, and 14 days respectively. Foreign ships averaged 28, 8.1, 13.8 and 10.5 days respectively. The foreign ships averaged 40 to 50 per cent smaller than the American vessels. Records are based on: Liverpool, 14 British steamers and 19 American vessels; Antwerp, 61 foreign and 25 American; Hamburg, 28 foreign and 9 American; Marseilles, 20 foreign, 7 American.

OPEN NEW LINES

Inaugurate More Services to All Parts of World—South American Passenger Line is Proving Success

The MERCER VICTORY, a shipping board vessel recently built, has been selected to make the initial trip in a steamship freight service between Philadelphia and the Orient. This marks Philadelphia's first direct service to the Orient since the days of Stephen Girard. The new line is to be operated by the International Freighting Corp. It is also said that 13 steel steamers, representing some 115,000 tons, have been allocated by the shipping board for permanent operation out of the Columbia river by the Columbia-Pacific Shipping Co. and Sudeen & Christensen.

The Luckenbach line will resume its New York to San Francisco services with some shipping board tonnage. The Dollar line has actually begun its services from New York to the Orient by its first sailing of the GRACE DOLLAR. The Atlantic & Pacific Steamship Corp. has taken over the operation of the regular freight service previously maintained by W. R. Grace & Co. between New York and Indian ports. This service is to be known as the U. S. line. The North Atlantic & Western Steamship Co., a new organization, is inaugurating a service out of Philadelphia to Pacific ports via the Panama canal, sending the steamer ARTIGAS with a cargo of steel and general merchandise.

Offer Ships For Sale

Among the privately owned lines, the most important development of the month was the effort by some of the old coastwise lines to dispose of their ships. The Old Dominion line steamers were offered for sale. The Old Dominion, while relinquishing the services between New York and Norfolk, expects to obtain a new fleet and enter the Mediterranean and Black Sea trade, purchasing shortly for this service a modern and large passenger vessel as a beginning. The Norfolk piers of the Old Dominion have been taken over by McDonnel & Truda, representatives of an Italian line. Furthermore, it is learned that the A. G. W. I. will sell 13

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Ocean Freight Rates

Per 100 Pounds Unless Otherwise Stated

New York to	Grain	Provisions	Cotton (H. D.)	Flour	General cargo cu. ft.	General cargo 100 lbs.	‡Finished Steel	Coal from Virginia cities
Liverpool	$ 0.40	$ 0.75	$ 1.55	$ 0.65	$ 0.50	$ 1.00	$10.00 T	.....
London	0.40	0.75	1.55	0.65	0.50	1.00	10.00 T	.....
Christiania	1.15	1.50	2.50	1.07	0.85	1.50	1.24	.....
Copenhagen	...	1.25	2.00	1.05	0.70	1.50	15.00 T	$22.00 T
Hamburg	0.65	0.90	1.50	0.80	0.60	1.25	....	22.00 T
Bremen	0.70	0.95	1.60	0.85	0.65	1.30	....	22.00 T
Rotterdam	0.55	0.75	1.55	0.60	0.50	1.00	12.00 T	20.00 T
Antwerp	0.55	0.75	1.55	0.60	0.50	1.00	12.00 T	20.50 T
Harve	0.55	0.90	1.55	0.90	0.45	0.90	12.00 T	20.50 T
Bordeaux	0.55	0.90	1.55	0.90	0.60	1.25	12.00 T	20.50 T
Barcelona	...	20.00 T	...	...	—30.00 T—		....	23.00 T
Lisbon	...	20.00 T	...	...	—30.00 T—		....	20.00 T
Marseilles	1.25	1.25	1.90	1.25	0.75	1.50	15.00 T	23.00 T
Genoa	1.20	1.30	1.25	1.20	0.65	1.30	16.00 T	.....
Naples	0.65	1.00	1.15	1.00	0.65	1.25	16.00 T	23.50 T
Constantinople	23.00 T	1.50	1.50	22.50 T	—28.00 T—		20.00 T	26.00 T
Alexandria	1.35	1.60	...	25.00 T	—28.00 T—		20.00 T	26.00 T
Algiers	28.00 T	1.60	...	28.00 T	0.75	1.35	20.00 T	22.00 T
Dakar	—20.00 to 28.00 a ton on all cargoes.—							
Capetown	...	...	...	30.00 T	—27.00 T—		20.00 T	.....
Buenos Aires	...	...	...	...	—20.00 T—		12.00 T	14.00 T
Rio de Janeiro	...	...	1.75	...	—18.50 T— †		12.50 T †	14.50 T
Pernambuco	...	...	...	...	—19.00 T—		13.00 T †	15.00 T
*Havana	0.51½	0.57½	0.56½	0.51½	...	...	0.56½	.....
Valparaiso	1.18	1.18	1.02	1.02	...	...	18.00 T	.....
San Francisco	1.00	1.40	...	0.75	...	...	0.75	.....
Sydney	...	...	...	...	25.00 to 30.00 T		18.00 T	.....

T—Ton.
*A supercharge of 25 per cent is added to the Havana rate owing to the congested conditions of the harbor.
†Landed.
‡Heavy products except rails.

of its older ships. These have been owned by the Clyde, the Mallory, and the Southern lines. The coastwise lines have been seriously hampered in their operations by the attitude assumed by seamen's unions and under present conditions the business is not at all attractive.

Although the freight movement from Atlantic ports has been light during the past month, the passenger traffic has been unduly heavy. The lines are booked up for several weeks ahead. Passenger traffic to Spain, Italy and the French Mediterranean is keeping pace with that to the United Kingdom, French Atlantic, Scandinavia and Germany. Due to the cessation of the strike at Rotterdam, the Holland-American line began booking again the first of May.

Under new arrangements, the sale of government tonnage has proceeded rapidly during the past month. With one company the shipping board entered a long term payment contract which allows a long interval between the first and second payments and 10 years for final payment. It is expected that this same sales contract will be offered to others who wish to purchase government tonnage. The old plan provided for the payment of $8.35 per ton per month until 50 per cent is paid.

Huge Lumber Exports

Despite several handicaps, the North Pacific charter market as a whole remains firm with freights strong and steady. The business done has been limited by the number of vessels available. It is true that more ships are obtainable for general trades but lumber exports are limited because so few carriers can be chartered. With the exception of Oriental freights, all lumber rates are firm at prices paid last month. Due to increasing space and more vessels in the Oriental routes, the going rate on lumber is now $37.50 as against the $40 recently asked. This freight is expected to decline to $35 which appears to be in line with other cargo. Lumber is moving to the Orient in immense quantities and several full cargoes have been booked from Puget sound and the Columbia river at a reported rate of $35. Some flour is being shipped to China and the Philippines but there is intense competition in that field and Pacific millers are unable to pay freight in proportion to other cargo.

Japanese Want Rates Increased

Labor troubles in Japan are reported to be delaying shipping and Pacific operators are somewhat alarmed about the situation. Eastbound freight at profitable rates are not only scarce, but fuel oil is practically unobtainable in Japan, the price of this necessity having been advanced from $34 to $60.75 per barrel. In consequence, several transpacific freighters have been diverted via Honolulu in order to replenish their supplies. Japanese lines have inaugurated a movement to increase freights from the Orient to the Pacific coast. This route has been demoralized for months, some freight having been carried for $3 or less. Announcement that the shipping board will establish a freight conference on this coast to permit American operators to meet foreign competition is regarded as a step in the right direction. In the meantime, freights to the Far East remain firm at $12 for weight and $14 to $15 for measurement

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cargo. Increasing numbers of Japanese tramps are returning to the Pacific and it is believed that freights may soon ease up. Some call exists for flour tonnage, the immediate movement being to Alexandria, Egypt, for which distant port three or four vessels have been fixed. Additional tonnage will be required later to move the surplus of foodstuffs from Washington and Oregon to Europe.

Strike Hampers Boston

The month of April, ordinarily showing a marked advance in exports over March at all ports, showed a decrease in the amount of shipping at Boston as compared to the totals for March, largely due to railroad transportation difficulties. Large quantities of winter grain stored throughout the west and northwest have been tied up unable to reach the ports. The export demand from northern Europe, particularly from the Scandinavian market has been strong but offerings of cargo have not been heavy. Nearly all lines operating out of the port of Boston report having missed one or two of the regular scheduled sailings during April on account of lack of cargo. The strong offerings of cargo for Greece and other Mediterranean ports during the early part of the year have fallen off. To replace this, a greater tonnage has been offered in the South American trade. Machinery and automobile parts have formed a large part of the shipments made from Boston to northern Europe ports and as much of this material is manufactured in New England, its movement has not been appreciably hampered.

New Line For Pacific Trade

Shipments of automobiles have been made where the machines were driven over the road from Michigan to Boston and then crated for ocean shipment. Large quantities of cotton goods from the New England mills have been exported to England, France and Belgium. The Mediterranean cargoes have consisted chiefly of flour and grain, leather goods, and miscellaneous merchandise. The railway strike while holding large quantities of goods originating in the west has not been without advantage in some respect to the Massachusetts port. Many New England manufacturers who sent their products, without question, to New York for export have been forced to turn to Boston because of the railroad embargoes. A new service has been started during the past month for shipment from Boston through the Panama canal to Los Angeles, San Francisco and Seattle. The operating company is known as the North-Atlantic & Western Steamship Co. and will operate three steamers of approximately 6000 tons each. Rates from Boston to Seattle are expected to be approximately $28 or one-third less than the railroad rates.

Europe In Active Search For Coal

(From Our European Manager)

LONDON, May 10 (By cable)—Inquiry for grain from the River Plate has fallen off. Absence of activity in this trade has brought rates to a nominal figure of 115s. Grain chartering from Canada and the United States to the United Kingdom is on a rather sharply limited scale, rates holding at the level set by the British government authorities. Europe continues to demand coal with unabated vigor and fuel is sought even at great distances. American coal is actively wanted at the rate of $20 Antwerp for May loading. Even Australia is participating in the coal trade and a chartering contract for 100,000 tons from the island continent to Rotterdam has been drawn at 150s. This fuel will thus be brought 12,000 miles. Freights to the Far East continue dull, only a nominal activity having developed in this trade. Business relations with Black Sea ports continue to expand and a rate of 55s is now being done on maize from Roumanian ports to the United Kingdom.

Japanese Yard to Build 50 Big Ships

THE Kawasaki Dockyard Co., Kobe, Japan, which recently announced plans for a marine insurance company, now reports plans for building during the next two years 50 steamships of from 9300 tons to 9700 tons each. The company already has several contracts for building during 1920 and these, added to a portion of those mentioned, will make a total of 30 ships of 300,000 tons to be built. It also is reported in the *Japan Advertiser* that the long pending proposal for increasing the company's capital to 100,000,000 yen ($50,000,000) will be carried into effect soon.

Foreign yards will build about half of the large fast ships which the Nippon Yusen Kaisha contemplates adding to its fleet of vessels. Y. Ito, managing director of the company, is quoted as saying that while it is quite possible there will be a decline in the cost of shipbuilding in the future, the Nippon Yusen Kaisha wishes to obtain bigger and faster vessels as soon as possible. In view of the fact that it is difficult to build large ships having a speed of 20 knots in Japan, the company expects to place several orders for this class of vessel abroad. The total building program of the company covers some 500,000 tons.

Arrangements on a wide scale are being made at the naval port of Kure, Japan, and the surrounding neighborhood to facilitate the manufacture of warships, seaplanes and other weapons of naval warfare. It is said that changes in the naval dockyard are to be made primarily for the purpose of turning out larger warships and seaplanes. The building of the AKAGO, a warship of 40,000 tons, will be commenced this spring. At the same time plans are under way for stocks to accommodate ships of 50,000 to 60,000 tons.

The first full cargo of foodstuffs shipped from the Columbia river to Egypt direct was sent out on the shipping board steamship EELBECK, which sailed with 275,000 bushels of sacked wheat valued at $786,000. Several other vessels are chartered for similar business from Portland and Puget sound.

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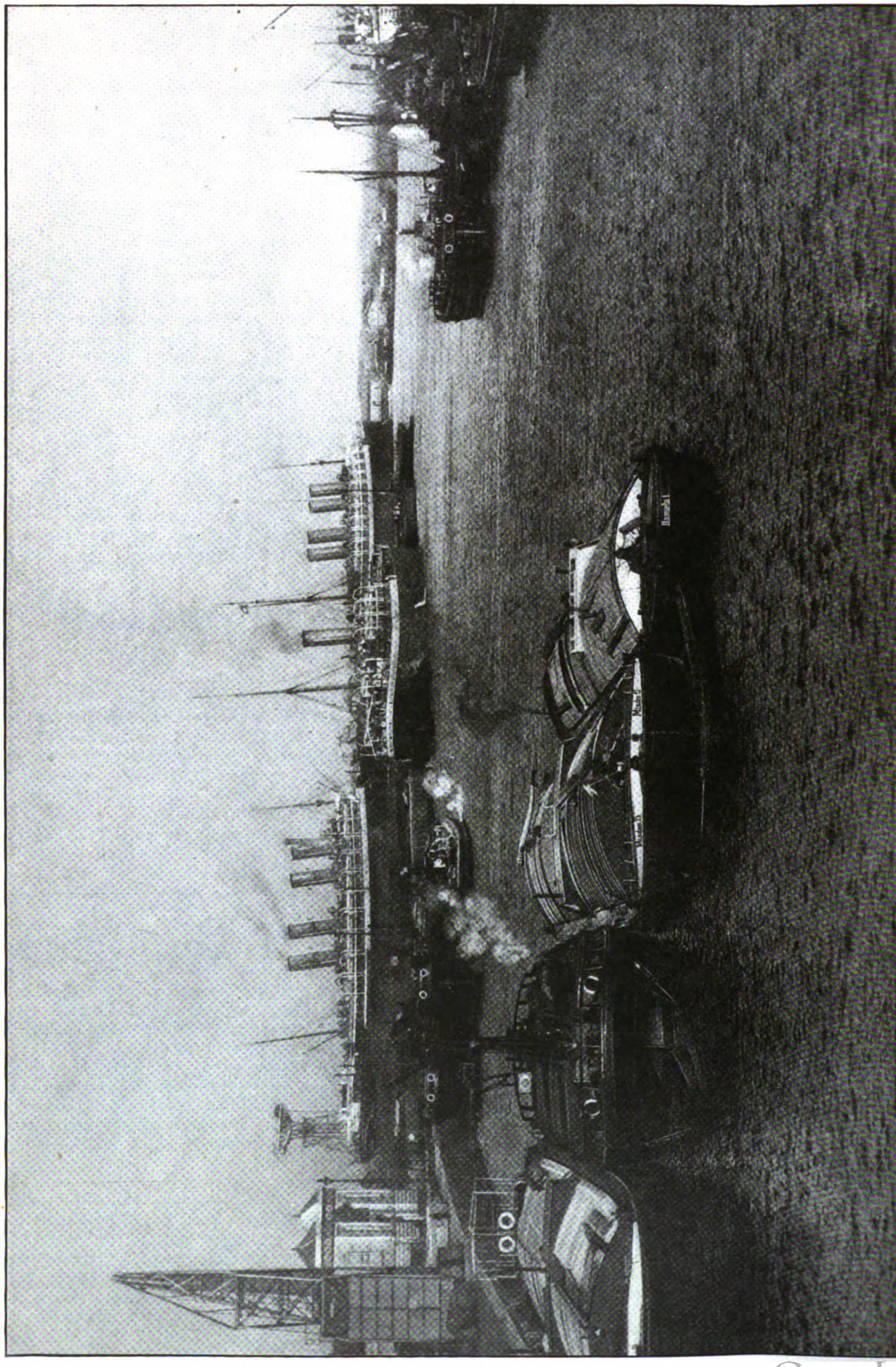

FIG. 1—THE LOST JEWELS OF BREMERHAVEN

The KRONPRINZESSIN CECILIE and KAISER WILHELM II at their docks in Bremerhaven just prior to one of their last voyages under the German flag six years ago

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German Shipping Hard Aground

Ships Built Last Year Surrendered to Allies—New Construction Virtually at Standstill—Plans Vague—Steel, Coal and Oil All Short

BY H. COLE ESTEP
European Manager, The Marine Review

GERMANY'S economic problems have become of interest to everybody but the difficulties of separating truth from propaganda have frequently prevented a clear knowledge of what was going on in that formerly powerful country. For that reason, we believe this article prepared by an American student of economics who, as European manager of THE MARINE REVIEW, *spent some weeks in Germany surveying her industrial conditions, offers the reader an unmatched opportunity to learn what German shipowners and shipbuilders are doing.*

IN ATTEMPTING to review the present German shipbuilding and shipping situation, although the war is ended, it is scarcely possible to escape the observation that the root of Germany's commercial seafaring troubles in this piping year of peace can be traced back directly to the depredations perpetrated on the merchant navies of the world by the unrestricted submarine campaign. But in Hamburg this connection does not even yet appear obvious, in spite of the educative influence of many of the events of the past year. The most cherished exhibits of the big German shipbuilding firms are models of U-boats; these are proudly displayed to the visitor, who at the same time is regaled with information regarding their superior commerce-destroying capabilities.

The inevitable psychological result of these dissertations is a mental picture of the thousands of British and allied merchantmen disintegrating on the bottom of the north Atlantic—and the deduction that just as the submarine proved to be Germany's military nemesis, so may it turn to be an Old-man-of-the-sea weighing down and throttling the growth of the new commerce fleet republican Germany is commencing to dream about.

Dreams at the present time are the substance of German shipping. The black-white-and-red fleet has been reduced from millions of tons to a bare 200,000, confined to coastwise operations around the Baltic and North seas. This fleet, according to the terms of the treaty of peace, contains no vessels over 1600 tons and includes scarcely 200 bottoms. The German merchant ensign is no longer seen in the far ports of the world.

While a certain revival of German shipping is probably in order, it seems to the writer, after a month's recent investigation east of the Rhine, including such ports as Bremen, Bremerhaven, Hamburg and Stettin, that the day is far distant when the German merchant marine will approach its prewar status. It is necessary for this country to commence again at the beginning and to create not only the necessary tonnage, but to reorganize its completely shattered shipping services. In addition to the purely material disadvantages under which Germany is laboring at present in every field of reconstruction, the re-establishment of her overseas shipping services is fraught with many serious difficulties. Before the war, for instance, Germany operated a large number of steamers through the Suez canal in the trade with Ceylon, Australia, etc. Such service, of course, necessitates resident agents at the outlying ports. The British government, however, has taken the position that no former enemy aliens resident in its colonies prior to 1914, who were interned during the war, can obtain passports to return to such colonies for three years. With due regard for such difficulties as this, the material obstacles to be overcome before any extensive German fleet can be reconstituted are by far the more serious.

The exhaustion of commodities in Germany at the present time is appalling and this refers specially to iron and steel products necessary for shipbuilding. Steel production, for instance, has fallen steadily during the past seven years from 18,935,089 metric tons in 1913 to 7,768,569 tons in 1919. In other words, where three tons of steel were available for new construction and repairs in German shipyards prior to the war, only one ton may be had today, on a pro rata basis

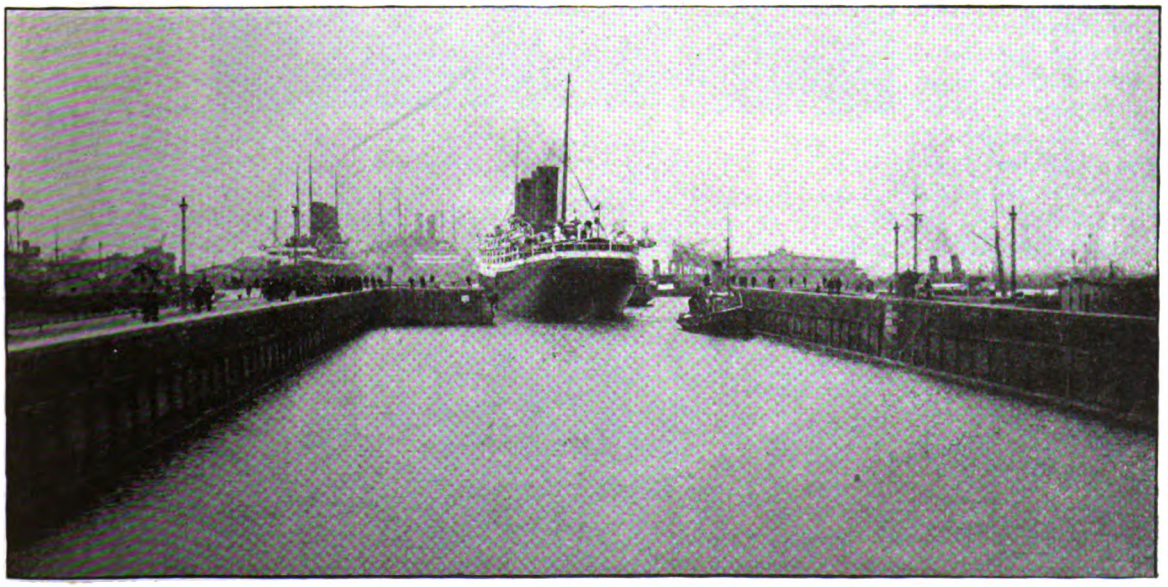

Fig. 2—Harbor at Bremerhaven — A magnificent tide-locked basin

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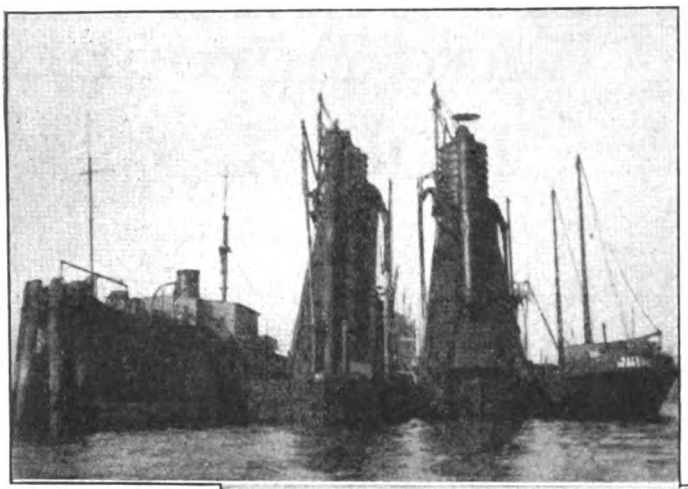

Fig. 3—Empty grain elevators at Hamburg in March, 1920

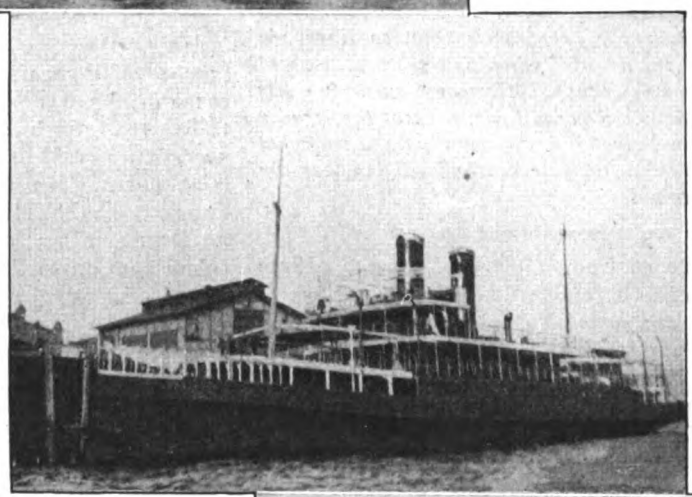

Fig. 4—Idle river steamer at Hamburg

Here lies what is perhaps the greatest obstacle to the rapid reconstruction of the German merchant fleet. Germany in general is only a shell of her former self. Her substance was burned to ashes in the furnace of war. This fact should be thoroughly understood before attempting to analyze her maritime situation. Furthermore, the social and political situation in Germany reacts on the industrial outlook to an unusual degree. The social fabric has been so rent and torn that one cannot deal with German industry by itself; it must always be considered with reference to its reactions on the social order.

Although, of course, conditions have vastly improved since the last winter of the war, nevertheless life in Germany for the mass of the people is still a daily fight for food. It is very difficult for an American, accustomed to take the elementary necessities of life for granted, to understand the real situation as it exists in Germany today and to appreciate its effect on the nation's industrial activities. From a land where riveter's automobiles congest the streets leading to the shipyards, to one where black bread containing 10 per cent wheat and 90 per cent unmentionables cannot always be obtained, is a far cry.

Some Residue of Energy

Fortunately for the outlook of German shipbuilding and other industries, a certain residue of the native Teutonic habits of industry and thrift remains. To this degree at least Germany is lucky, for it appears self-evident that only through hard work and production can Germany's salvation be worked out. But such favorable developments as may result from continuous hard work can only influence the general situation gradually in view of the almost complete economic collapse which has taken place.

The collapse of the mark is another seriously unfavorable factor, particularly with reference to shipping. For ship construction certain imports are necessary, particularly copper, which Germay does not produce, together with rubber and other necessary raw materials. With marks at practically one-twentieth of their normal value in neutral and allied money markets, it is growing increasingly difficult to finance such imports. In fact the collapse of German exchange has created an economic blockade almost as effective as the military blockade maintained by the British navy throughout the war. This new

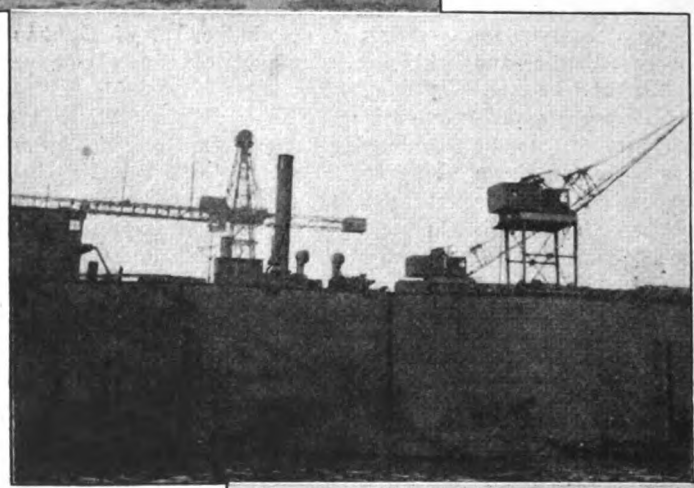

Fig. 5—Idle dock equipment of Hamburg which may have to be surrendered

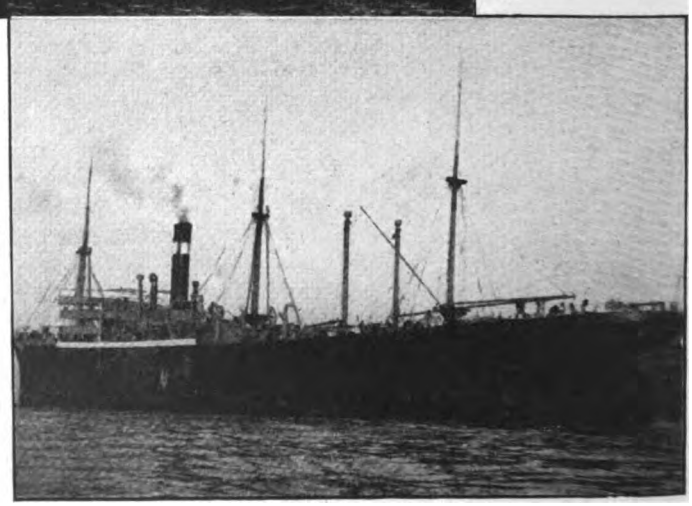

Fig. 6—New German ship built at Hamburg since July, 1919, and seized by the allies in fulfillment of peace treaty conditions

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blockade is aggravating the industrial disorganization initiated by the war blockade. Except vitally necessary food, very few imports are going into Germany. Also owing to the tremendous exhaustion of commodities, the export trade of the country is at an exceedingly low ebb. The trade of the great port of Hamburg for instance has dwindled to one-tenth of its prewar volume. Germany's whole economic fabric is in fact threadbare. It is in the face of these conditions that Germany is obliged to set about the task of rehabilitating at least a portion of her once formidable merchant marine, and it seems necessary, even in the interests of the allies, that she eventually achieve a certain degree of success, for the world now appears to realize that Germany is more desirable as a going concern rather than as a bankrupt. It is perhaps, therefore, to be hoped that those forces tending toward the maintenance of order and the stimulation of production which are now beginning to have some influence on German economic life, may continue to develop, in spite of the setbacks resulting from recurring political upheavals. The latter offer at present an exceedingly serious industrial handicap.

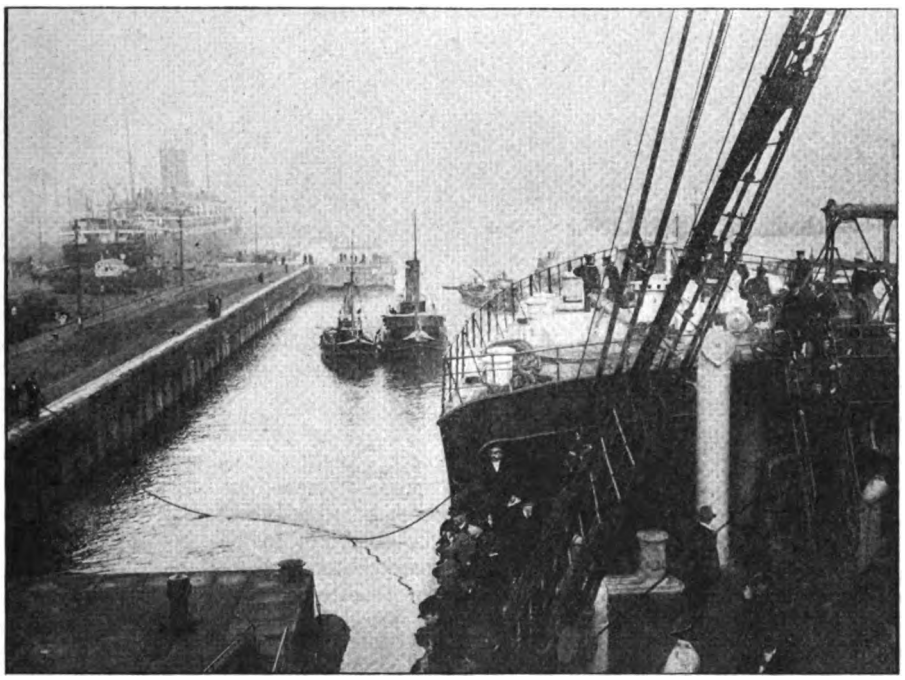

FIG. 7—NO MORE SCENES LIKE THIS
Arrival of a big liner at a north German port prior to the war

For the time being German shipbuilding appears to be practically at a standstill. Virtually the only new construction to be observed in the great harbor of Hamburg in March was a small floating drydock which was being built at the Vulkan plant on the ways formerly occupied by the mammoth IMPERATOR.

The stagnation which existed in March was due partly to temporary conditions. In the period between the signing of the treaty last July and its ratification on Jan. 10, several large new cargo steamers were constructed in north German shipyards and some of these have only recently been completed. One of them, launched by the Vulcan-Werke A. G., is shown in one of the accompanying illustrations. This ship was built for the German Australian Steamship company which formerly maintained a service between Hamburg and Australia. But the peace treaty provides that all new German ships over 1600 tons launched up to the time the pact "comes into force" must be surrendered. The Germans appear to have overlooked the exact wording of this clause, because they proceeded on the assumption that the allies would reckon from the date of signing in July, rather than the date of ratification in January. The supreme council has ruled otherwise, stating that the treaty "did not come into force until Jan. 10, 1920," and it has been decided that these ships must be surrendered, without credit insofar as the clause providing for the delivery of 200,000 tons of new shipping per year by Germany for the next five years is concerned. Furthermore an allied note has been sent to the German government contending that these vessels were entente property from the date when the treaty came into force. The vessels were handed over on March 10 and some of them in the meantime had been in service. It is claimed that the freights earned in these three months are also payable to the entente. With reference to the older ships to be surrendered, the right also is claimed to select the vessels in such a way that the allies receive tonnage of average quality.

The necessity for handing over all the new ships built since July has not improved the feelings of the German shipbuilders and shipowners. At the moment of writing they are adopting a purely waiting policy, fearing further complications until a *modus operandi* is worked out regarding the 200,000 tons of new shipping which Germany must build for the entente this year.

The big north German shipyards are operating at present at less than one-third of capacity, and insofar as new construction is concerned, at less than one-tenth of capacity. In addition to such repair work as comes along most of these plants at present are occupied mainly with repairing and building railway equipment. At the Vulkan yard in Hamburg about 4000 men are employed of whom perhaps three-quarters are engaged on railroad work. This yard has employed as many as 12,000 men at one time. Other shipyards in this vicinity are in similar situation. The North German Lloyd dockyard at Bremerhaven is also repairing railway equipment and since the first of the year heavy repairs have been completed on 14 German locomotives at this plant.

* * *

IN ADDITION to the shortage of steel previously mentioned, German shipbuilders of course are confronted with extraordinary prices, as expressed in marks. The official quotation on ship plates on March 1 was 3435 marks per ton. While at the moment this nominally represents only about $35, such a conversion is misleading. German exchange has reached such a low ebb that although the prices may be converted, it is impossible to translate the values involved. German shipbuilders, therefore, instead of being provided with exceedingly low cost material are in fact existing under tremendous financial handicaps, insofar as their own internal operations are concerned. In addition, not the least among their difficulties is the great instability of prices which exists at the present time. Germany is in fact undergoing a price revolution resulting from the inflation of the currency, the fall in exchange, and the exhaustion of commodities Taking up ship plates again, for instance, it is found that the present quotations represent an increase of 1100 marks per ton since December and a boost of 2250 marks since October, 1919.

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Prior to that time the rise had been fairly steady dating back to the beginning of the war when the quotation was only 100 marks per metric ton. In German money the present quotations represent a price inflation of over 3000 per cent. The price situation is further aggravated by the fact that no tonnage can be secured for reasonable shipment at the official quotations. A shipbuilder who really needs steel must be prepared to pay premiums for delivery ranging up to 2000 marks per ton on plates, and up to 3000 or 4000 marks on some other forms of iron and steel. As a result, practically no plates are available on any reasonable basis of delivery under 4500 marks per ton. Furthermore, the steelmakers are not content to sell their material on a straight banking basis. They usually demand a considerable percentage of scrap, and in some cases half of the new tonnage has to be provided by the purchaser in the form of old materials. In addition, the shipbuilder is usually compelled to pay about half of the price in foreign exchange, in order that the steelmaker may have credits abroad for the purchase of iron ore and food for his employes. The situation is in reality tending toward the establishment of primitive barter conditions, the collapse in German exchange having seriously undermined the banking organization.

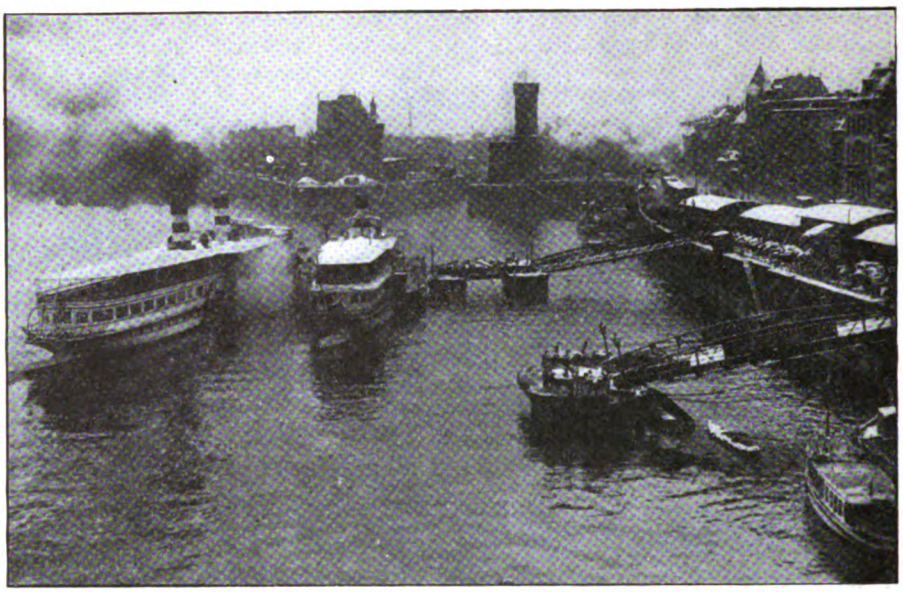

FIG. 8 RHINE TRAFFIC IS PASSING INTO THE HANDS OF THE DUTCH

* * *

IN THE labor field similar difficulties are encountered. The morale of the workmen, owing to incendiary propaganda and malnutrition, is exceedingly bad. In some shipyards production dropped to 30 per cent of the prewar output per manhour. Some improvement in morale has taken place since the first of the year and under the whiplash of hunger the men have agreed to the re-establishment of the piecework, or *Akkord* system of wage payment in most of the shipyards.

Took Three Votes

In the yards at Hamburg three referendums were taken on this subject, commencing early in the winter. The first vote of the men was strongly opposed to piecework. The second vote about a month later showed sentiment about evenly divided, while on the latest referendum a heavy majority in favor of the *Akkord* system was returned. As a result, the efficiency of German shipyard labor has shown material improvement this year, although it is still far below par.

The shipbuilders are further harassed by a new law compelling the organization of joint works councils of employers and employes, called *Betriebsräte*, which give the workers far reaching rights of co-decision and protest. The employers are hoping that this measure may be worked out on a practicable basis, and there are now indications that such may be the case. For one thing, the treasuries of most of the German trade unions are exhausted owing to the enormous expenses entailed by the many strikes engineered in the past year. The masses of the workers, therefore, who in the first month of the revolution were led by a few resolute men are now showing a disinclination to be terrorized. When on the second anniversary of the Russian bolshevist revolution, Nov. 7, 1919, the radical element among the workers desired to produce a new revolution in Germany, it seemed to be demonstrated that only a small party still follows the communist leaders. A subsequent mob revolutionary attempt in January was equally ineffective although it resulted in considerable loss of life in Berlin and Hamburg. In March the strategic points in Hamburg and other German port towns were still protected by barbed wire entanglements. The short-lived Kapp *coup d'etat* of March 13 was of militaristic origin, and of an entirely different character than the previous revolutionary outbreaks but it has served to further cloud the labor situation.

Wages Boosted Out of Sight

Shipyard wages have shown a tremendous increase in Germany since prewar days. In March 1914, the average wages for a male laborer on a 9 or 10-hour basis were 5.54 marks per day. By March 1, 1920, this figure had reached 38 marks for eight hours. Molders employed in foundries attached to ship-

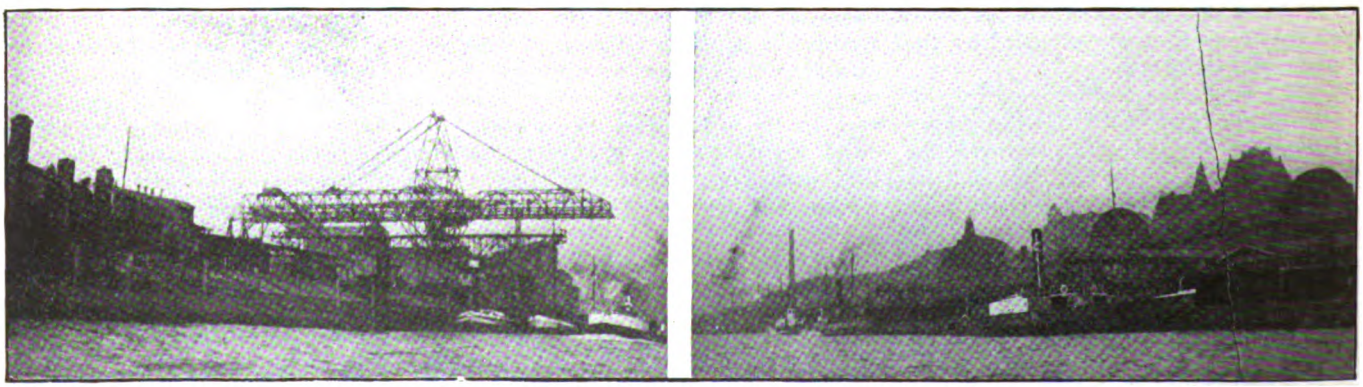

FIG. 9—THE PORT OF HAMBURG IS MAGNIFICENTLY EQUIPPED FOR HANDLING CARGO. FIG. 10—HAMBURG HARBOR IN MARCH, 1920

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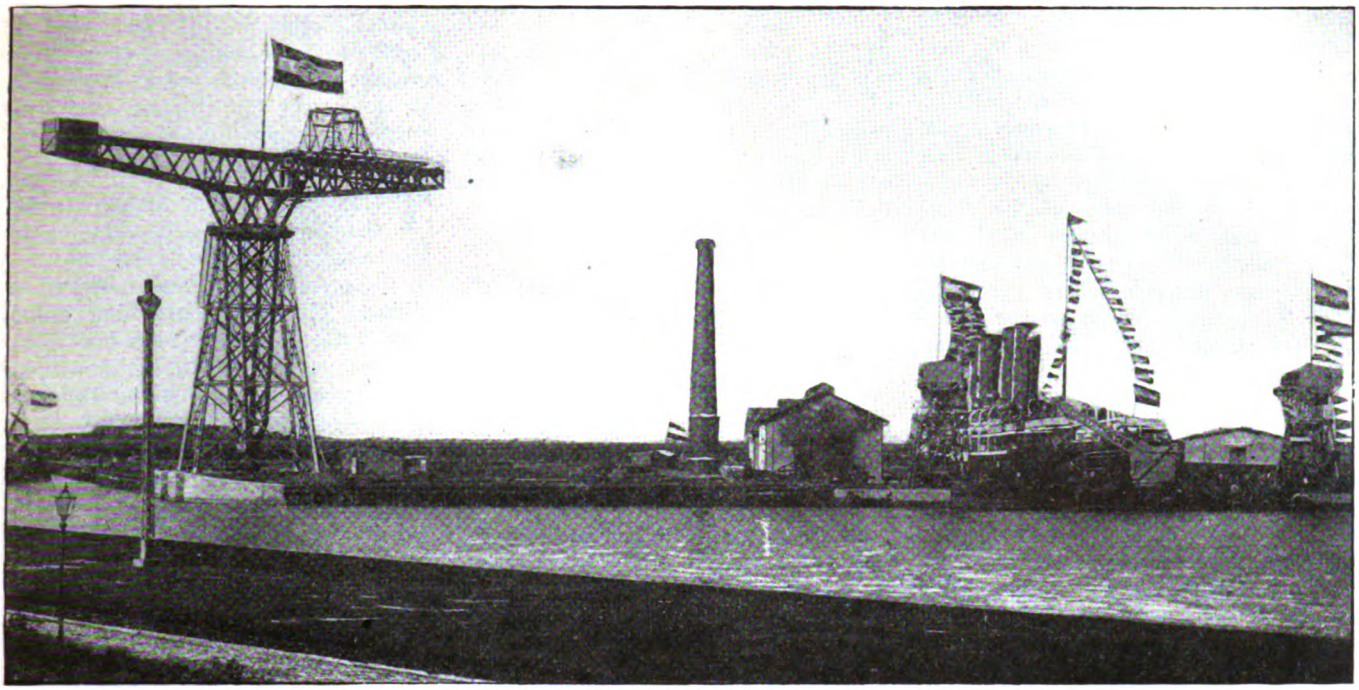

FIG. 11—DRYDOCK AND REPAIR YARD OF THE NORTH GERMAN LLOYD AT BREMERHAVEN, NOW MAINLY DEVOTED TO REPAIRING LOCOMOTIVES

building establishments now receive 5 marks an hour compared to 1 mark seven years ago. Skilled shipyard labor in Hamburg, Bremerhaven, etc., is paid at practically the same rate. Some unskilled labor in the Bremerhaven dockyards, which was paid 60 pfennigs an hour in 1913, is still available at 3.50 marks an hour.

* * *

THE shortage of coal is of course another important element in the existing complex situation. It is seriously interfering with shipyard operations and also with the bunkering of vessels. German coal production, which was 190,000,000 tons in 1913 fell to 116,000,000 tons in 1919. This latter figure includes the output of Upper Silesia, about 25,000,000 tons, which may be lost to Germany as a result of the forthcoming plebiscite. In fact the coal situation, so far as the German shipbuilders are concerned, is matched in importance only by the steel shortage, and of course the former is a contributing factor to the latter.

The question of fuel supply is in fact so vital that a brief general review of the German coal situation seems in order in this article.

Before the war, Germany's known coal reserves amounted to 57,000,000,000 metric tons. Through the cession of Alsace-Lorraine, the Saar district, and possibly also Upper Silesia, the known reserves will be reduced to less than 40 000,000,000 tons, that is, to under 70 per cent of their prewar status.

As previously mentioned, Germany's coal output in 1913 was in round numbers 190,000,000 metric tons. This figure is taken as the starting point in semiofficial memorandum on the coal situation recently issued in Germany. This memorandum points out that from the 1913 tonnage, 60,000,000 tons must be deducted to cover the theoretical output of Lorraine, the Saar district and Upper Silesia. Another 33,000,000 tons deduction is in order, it is stated, to account for the average reduction of output through the decreased working energies of the coal miners. On this basis, it is argued that Germany's yearly output after the war, within her new borders, assuming the loss of Upper Silesia, will amount to 97,000,000 tons in round figures. Taking up next the question of consumption, it is pointed out that in 1913 it amounted to 156,500,000 tons. Of this quantity, the surrendered or occupied territories consumed 37,100,000 tons. This leaves 119,400,000 tons as Germany's present annual requirement. In addition she must deliver 43,300,000 tons annually to the allies for the next five years. It is declared, therefore, that to meet all of her internal and external requirements, she will be called upon to produce 162,700,000 tons of coal annually during the next few years. To cover this only about 97,000,000 tons per year is in sight.

FIG. 12—GERMAN SAIL TONNAGE IN HAMBURG HARBOR IN MARCH, 1920

Must Reduce Coal Consumption

It seems possible, therefore, that Germany's own consumption may have to be scaled down from 119,000,000 to about 54,000,000 tons annually if the deficit previously mentioned cannot be made up, and it is exceedingly doubtful if more than a fraction of it can be covered by increased production. Of the 54,000,000 tons remaining at Germany's disposal, after meeting allied demands, the coal mines require for their own use 8,000,000 tons annually; house firing requires 17,000,000 tons; public services demand 7,000,000 tons; and railroad and ship bunkering requirements are estimated at 14,000,000 tons, leaving for industry, including shipbuilding, only 8,000,000 tons a year. This is about one-eighth of the annual amount of coal consumed by industry in Germany prior to the war. This tremendous coal shortage is affecting German shipbuilding and shipping operations in many ways aside from directly limiting activity.

Although coal is tremendously short in Germany the oil situation is worse. Practically every pound of oil fuel which German shipping may consume will have to be imported and paid for

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with marks at 5 per cent of their normal value. So in spite of the coal shortage there has come about a strong reaction in favor of the installation of ordinary reciprocating steam engines with coal-fired boilers in new German ships.

Germany is the home of the diesel engine, but under present conditions her shipping leaders point out that oil fuel is economically out of the question, in spite of the tremendous scarcity of coal. The foregoing illustrates only one of the many ways in which the extraordinary economic conditions now existing in the former German empire are affecting technical procedure.

* * *

THE peace treaty, as previously mentioned, demands the delivery of 200,000 tons of new German ships to the entente annually for the next five years. Although Germany's prewar shipbuilding capacity was perhaps in excess of one million tons per year, it is doubtful under present fuel, labor and steel conditions if her yards could turn out more than 400,000 or 500,000 tons annually. There is, therefore, available for the rebuilding of Germany's own merchant fleet at the present moment an apparent balance of only 200,000 to 300,000 tons per year, representing say 25 to 40 modern vessels of average cargo capacity.

Hence it is not surprising that the former great German liner companies, the Norddeutscher Lloyd and the Hamburg-Amerika line, have no intention of attempting to re-establish any of their passenger services at any time in the measurable future. About all these great companies hope to do is to create a certain amount of cargo tonnage to handle a portion of Germany's exports and imports. It would seem, however, that the idea of a new liner fleet has not been entirely given up, if one may judge from the fact that both of the companies mentioned do not appear to have closed any of their numerous branch offices throughout Germany.

Owing to the low value of marks, Germany is specially anxious to recreate some merchant shipping of her own. The payment of freights in foreign money as at present is of course a heavy tax. This is illustrated by the situation surrounding the importation of Swedish iron ore necessary for German steelworks. Before the war this ore cost about 20 marks per ton, laid down at Düsseldorf, including the Rhine freight from Rotterdam. Today, if it is handled in German ships, it can be delivered to the steelworks for 650 marks a ton, but if brought over in neutral or foreign bottoms the freight is increased by 400 marks per ton and the cost of the ore, therefore, reaches 1050 marks per ton delivered. This brings on another application of the famous principle of the vicious circle, inasmuch as the enhanced price of Swedish ore is quickly reflected in the quotations for ship plates.

Unemployment Rampant

The collapse of German shipping has of course brought about tremendous unemployment in the northern seaports. It may be estimated that there are 20,000 German seamen out of jobs at the present time, the number in Hamburg alone being about 8000. These large bodies of idle men are a serious menace to the stability of the social order. The situation has become so difficult for some, that German licensed officers are now said to be found working on American ships sailing out of Hamburg as watchmen and deckhands.

The harbors along the North sea are practically dead at the present time. Incidentally this has a bearing on the controversy regarding the surrender of dock material as reparation for the scuttling of the German warships at Scapa Flow. An allied commission has been sent to German ports to investigate this situation and determine how much dock material can be surrendered without seriously impairing the efficiency of the harbors. Owing to the fact so little traffic is moving, it would seem that if up to three-quarters of the dock equipment of such ports as Hamburg were removed at present, it would never be missed. The number of idle drydocks, slips, berths, cranes, grain elevators, etc., in Hamburg harbor is appalling. The unusually complete equipment of this port serves only to emphasize its present stagnation.

Uncle Sam to the Front

Such overseas shipping as remains to Germany is now largely concentrated in carrying food supplies. In January 21 American ships entered the harbor of Hamburg, compared with 22 British bottoms, 14 Dutch and 12 Norwegian. Before the war this great harbor received and dispatched approximately 800 ships per month. To look after its growing German traffic, the United States shipping board has established extensive offices in Hamburg. German headquarters for American shipping operations are subsidiary to the London office of the shipping board. The Hamburg office appears to be doing a considerable business, and this branch of the government, at least, does not seem to be disturbed by the anomaly of operating in a country with which the United States is still technically at war, and with which private citizens are unable to trade owing to the continuance of the trading with the enemy acts on the statute books.

* * *

THIS brief sketch of the German shipping situation would hardly be complete without some reference to the great inland water traffic of the Rhine. The American visitor cannot help but be impressed by the splendid manner in which this great natural avenue of communication has been developed. But Rhine traffic has also suffered severely from the collapse of German industry. If it were not for the needs of the allied armies of occupation on the left bank, the situation would be even more stagnant than it is. At present the Rhine is carrying perhaps half of its normal tonnage. Most of the traffic moves in large steam or motor propelled barges averaging 2000 tons in capacity. Some of these barges are so designed that they may cross the North sea and enter British ports. During the past year, owing to the economic pressure on Germany, there has been a considerable transfer of Rhine fleets from German to Dutch hands. At present, therefore, a large amount of the traffic is under the Dutch flag and the freights must be paid for in Dutch guilders. This has resulted in tremendous increases, from the German point of view. The rate from Rotterdam to Düsseldorf on iron ore, for instance, is now 75 marks per ton. It is difficult to believe that in 1913 this rate was only half a mark. Nevertheless such is the case and, furthermore, this contrast may be said to measure the disadvantage at which Germany finds herself placed today, in the maritime sphere, compared with her prewar position.

U. S. Line to Italy

Among the new steamship lines enumerated in the March issue was the Baltimore-Oceanic Steamship Co., Munsey building, Baltimore. This is a purely American corporation, and while it plans direct connections with Italian ports the company has been financed without the use of Italian capital. The Baltimore-Oceanic line was formed to give direct sailings from Baltimore to ports on the French Mediterranean, west coast Italy, and the Adriatic sea. The line has adopted as a house flag a red "swallow tail" carrying a black "M" superimposed on a white diamond.

Navigation across Lake Erie was opened April 2 by the Canadian steamer PELEE, of Windsor.

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Federal Ship Operation Absurd

Government Handling of America's Great Merchant Fleet Would be Ridiculous—Should Consider Ships as War Weapons

BY HENRY M. ROBINSON

IN THIS article Mr. Robinson draws upon his experiences as a member of the shipping board in analyzing America's shipping problem. He tells why any attempt by the government to operate its great merchant fleet under federal control is a "perfect absurdity." He also discusses the propaganda designed to prove that foreign shipyards are building at prices well below what American shipbuilders are able to offer. The article represents the judgment of a business man who has served as a government official.

I WANT to voice my sentiment in favor of world trade as distinguished from foreign trade. We had a great many discussions in the shipping board on the use of the two expressions, "foreign trade" and "world trade," and some psychologist finally called attention to the fact that, to the average American and to the average Irishman, a foreigner is a little bit outside of class, and that, therefore, it is better to use "world trade" instead of "foreign trade."

You, as world traders, have already discovered that the world's politics are very important in the commercial moves you make. You probably have discovered that England's commercial life, England's producer, and more particularly England's exporter, and importer and shipper, tell England's foreign office what they want done, and England's foreign office sees that insofar as it lies within the power of that office, what England's commercial life desires to be done is done.

Now the theory on which our government has proceeded has been entirely different. Our state department, which compares in other respects with England's foreign office, has at all times divorced itself, so far as it possibly could, from any control, or really from following any suggestions of the commercial life of this country. This policy has been very noticeable during the last six years.

An American Problem

One of the great difficulties of world trade for America is the lack of a proper number of men trained with a knowledge of what the world's consumption is, the character of commodities required, the insurance problem, the ship movements, and other such vital factors.

Before the war our overseas shipping was, of course, very limited. Probably a million and a half, certainly not over 2,000,000 deadweight tons, would cover the overseas shipping under the American flag, and while I am talking, I will limit myself to ships over 1500 tons, that are suitable for, and have in the past been used in, overseas shipping—this as distinguished from possibly larger ships in lake and coastwise trade. With this limited tonnage, the net result was that most of the men who knew the details of world trade and world shipping were either from other countries originally, or were so related and under such contractual relations with the commercial life of other countries, that they could hardly be considered true Americans.

The war emergency brought home to us, I think, the absolute need for some kind of an American merchant marine. China found out that without ships, during the war, she was absolutely helpless.

I think that our people are at last partially awake. They may not agree as to the size of the merchant fleet that should be under the American flag, but I think that it is perfectly clear to us all that there should be an American merchant fleet maintained and operated under the American flag, for the export of American goods and for the importation of goods that are needed in this country.

One percentage has been suggested, and that is that we should have a fleet that would be equal to the task of carrying 50 per cent of our gross exports and imports. That may be a fair figure to arrive at, and a fair basis on which to plan.

The emergency of the war rushed us into shipbuilding. When the program is completed we shall have built about 13,500,000 deadweight tons of ships. Included in that total are our wooden ships and certain other ships that are not especially needed.

The whole world tonnage prior to the war was in the neighborhood of 56,000,000 tons. The world tonnage today is about the same as it was in 1914. Its distribution is different. The alien enemy countries have lost their ships. America has acquired between eight and ten million tons, and when the program is completed we will have 13 or 14 million tons. The French, Italians and British have substantially the same tonnage that they had at the outbreak of the war, that is assuming that the distribution of alien enemy ships is made as proposed under the peace treaty and I think that is fairly true today; that is, England and France have shared Germany's ships, while Italy received most of the Austrian ships.

The English believe that today the world's ocean tonnage is not more than 70 per cent as effective as it was before the war. This is partially due to abuse of ships during the war, partially due to condition of German ships which were taken out of her ports; partially due, and I think more largely due, to conditions in the various ports of the world, and England has had her own troubles in that respect.

Coal Shortage Hurts England

The backbone of England's shipping in many lines has always been her ability to ship out bunker coal and to export coal for consumption in foreign ports. England's coal situation today leaves her with a shortage of bunker coal and export coal as compared with her prewar state. The condition is improving, it is true, but she is in a way bound to supply France and Italy in their very great need. That she is doing; but this in turn affects her export position in the rest of the world. The ships that formerly left England for South America or for far points in the East carried a third or a half and oftentimes a full cargo of coal for delivery, and came back loaded with commodities which England wanted. She shipped other things of course, but coal furnished a very considerable basis for the initial voyage. The want of this coal, in quantity, has worked against her since the armistice.

The cost of construction of ships in England today is very close to the cost of construction in the United States. I might say in passing that you get many remarkable statements

From an address delivered before the World Traders club, Los Angeles, April 1. Mr. Robinson recently resigned as a member of the shipping board.

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as to what you can buy an English ship for. Our experiences up to last September, and I have not checked it since, was that if you ran down the gossip on the price of a ship offered for sale under the English flag, and the price was less than the equivalent of $140, you always found a bug in the trail or in the ship.

When I was in Glasgow, less than a year ago, the British asked £33 and 18 months delivery with the contract open on wages for ship construction and also on steel, so that the purchaser really had no very definite idea of what he would finally pay for a new ship.

Two months later, contracts were made in this country,—flat contracts for $150 per ton for the same type of ship to which I have just referred.

When it comes to the cost of operation, I think we all recognize the difficulties we face in working under the American flag. However, the difference is not as wide as some of the propagandists would have us believe. At least, that is the opinion which we arrived at from the best figures that we could get, after very careful study. I am now speaking of a comparison between vessels under the American flag and those flying the British, Norwegian and the Dutch flags,—the comparison may not be so true of France, but is fairly true of Italy. I can make no very satisfactory statement when it comes to competition with Japan.

Government Operation Absurd

I don't think that you could get anyone—at least, I have no one in my circle of acquaintances—that would even suggest that governmental operation of ships is in any way practicable. I heard Mr. Rosseter state before a senate committee that in his opinion 40 ships was the limit in the number that ought to be operated under one management. Of course, our British friends have gone away beyond that, and I can not say that they are not successful, but I have no doubt that there are a very great many difficulties in the operation of a large number of ships, for movements are quick and you can not have rigid operating rules.

For the United States government with practically no "ship-mind" at the time we went into the war, to undertake to run permanently, on any kind of a satisfactory and economical basis, 2000 ships, (and that is what the construction program calls for), is a perfect absurdity.

The shipping board itself, as it is now constituted, and our present administration in Washington both believe that the ships should be sold. Most of the members of the shipping board believe that we should sell about 300 of the lake built ships to foreign nations, dispose of the wooden ships the best way we can, and even sell many of the ships of the 5300, 7500 and 8800 type, since we have too many of this type considering their speed and their general condition.

It is believed if these were sold, the money, if it should be used again for ships, should be used to build faster and larger ships for special service, but I doubt whether congress or any of the rest of us would feel that it would be altogether wise to take any money received from the sale of any of our ships to build new

HENRY M. ROBINSON
Former shipping boa d member who declares government ship operation an absurdity

ships through the medium of the shipping board.

There has been a great deal of discussion, covering the basis on which the shipping board should sell the ships now belonging to the government. We have seen various plans and various prices offered. It is believed that a plan, which has been suggested primarily in Washington and which is now under consideration by the bankers committee on ship securities, might be fairly close to the right basis. This plan contemplates a sale of the ships which it is desired should remain under the American flag, at a price which should bear a very close relation to the price at which these ships could be replaced in American yards at this time, with possibly a small bonus for prompt delivery, depreciation, and a consideration for the time that they have been in the water. It also contemplates that in addition to the depreciation, which is none too generous as allowed by the treasury department, a special amortization equivalent to 10 per cent a year for three years, should be arranged, the theory being that even at the present replacement cost of ships, the price is too high to permit a man to buy a ship and run in competition with a competitor who bought his ships under prewar prices, even though the latter ship is old. Assuming that $160 or $165 is the per ton cost of the average cargo ship, and allowing the amortization for three years and 5 per cent for depreciation (which is what they used to allow, but I believe they insist on reducing it now) this would make a book investment of something less than $100 per ton, which would even then be probably above the average of the competitor's original ship cost, (though that is very difficult to follow, through the multiplicity in investment forms that have taken place in all the countries during the war.) This plan also contemplates that the amortization fund shall be set aside and be applied, so far as it will go, to the construction of new ships in American yards.

Congress is Stumbling Block

The difficulty seems to lie with the situation in congress. There is a certain element which believes that because the government owns the ships, it is a fine time to try government operation. There is another element that for some reason feels that it is a frightful thing for the government to take a loss on these ships. I submit that this is an absurdity because practically the entire bulk of shipping was constructed for war purposes and was, so far as the people generally thought, just like ammunition.

It was to fight the Germans and it was not to start a merchant marine that our ships were built. For the government to absorb a loss between what the ships cost and what they stand on the books is not unthinkable. Since the percentage would not be large its loss would not, in my mind, offend the people of this country in the least degree, but politicians in congress are very fearful that the people would be offended.

As a matter of fact, when the ship program is completed, it will have cost $2,800,000,000, and I believe that if the ships were sold on the plan suggested, they would bring in the neighborhood of $2,000,000,000. True this is a loss, but as compared with what we spent in other respects in the war, this is relatively a small amount, and it is manifestly not fair to expect American trade or American shipping men to take ships at government cost and hope in any way to maintain themselves in competition with the world.

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Jones Bill Wins General Favor

Most Important Marine Measure Ever Before Congress Has Wide Support — What Builders, Owners and Operators Think of the Bill

BY REUBEN A. LEWIS

THE declaration of a national marine policy by congress will have a stabilizing effect upon shipping comparable to the helpful influence that a decision on the treaty of peace would exert upon business. The shipping world, swept for more than a year by the shifting winds of circumstances and the indecision of the lawmakers, will know where it stands.

A bill, embodying the plans under which it is hoped that the fleet of American merchant ships may be firmly established upon the seven seas, has finally been evolved. While the measure provides for the retirement of the United States government from the shipowning sphere and declares for ultimate operation by private interests, eleventh hour changes have modified the policy to such an extent that it would scarcely be recognized as the amended bill which passed the house of representatives last November.

Late Changes Opposed

Almost up until the eve of the day upon which Senator Jones reported the bill, which he had sponsored, to the senate, there was a general approval by the most representative figures in American maritime affairs. Late revisions, however, made some of the leading shipowners feel that the retirement of the shipping board as a shipowner would be years distant.

The initial cost of the tonnage is the key to the whole solution. From the very outset, shipowners have contended that the ability of the American steamship interests to absorb the government owned fleet would depend upon the figure at which the ships were offered for sale. A shock was produced when the senate committee on commerce recommended that the shipping board should be directed to sell the various ships at a price equivalent to replacement cost after due allowance had been made for depreciation. Prior to that time, it had been anticipated that all interests would lend their support to the bill, with the exception of the section providing for discrimintaing duties.

The position of the shipowners in regard to the sales plan is that the

FOR months, the future of the American merchant marine has waited for action by congress. The problem has been that of handling wisely the great number of ships now under the American flag rather than the old familiar question of making the construction of more ships possible. Definite knowledge of the probable course of congressional action is now available. The house of representatives passed the Greene bill, which now is modified and expanded in the Jones bill before the senate. In this article, the resulting measure is interpreted in terms of the owner, builder, operator and of all the many interests growing up around this great new industry. The present bill is undoubtedly the most important marine measure ever presented to congress and a study of its provisions should benefit every American.

senators, by decreeing that the shipping board must not sell for less than the current prices at which American shipyards are willing to contract for constructing ships of similar types, have removed the incentive to buy. They assert that by placing orders with the shipbuilding yards for new tonnage, they will be able to acquire ships, especially designed to meet the special needs of each trade, constructed more staunchly and equipped with the latest improvements. If the price of these steamers is substantially the same as the stock ships, built under the stress of war, the shipowners confess they see no prospect of private interests buying the bulk of the government's fleet.

The shipbuilders are better satisfied. Although the industry is enjoying a lull now that the tanker boom is on the wane, days of activity are foreseen if congress approves the Jones bill. Frankly, the outlook for passage in its present form is not roseate.

Inquiry among the leading steamship owners in the United States has revealed that while they broadly approve of the Jones bill, it is their opinion that the sale price declaration is economically unsound; that it has not gone far enough in defining the marine policy, and that it will not accomplish the objects sought.

Their principal objections to the proposed bill are:

1.—The price, at which the shipping board is directed to sell the tonnage, is too high.

2.—No definite assurance is given that the government will retire from shipping.

3.—The preferential duty scheme, which seeks to give the advantage to ships of American registry, will result in retaliation and a feeling of hostility.

4.—By increasing the number of commissioners, the shipping board becomes less wieldy and lacks the intimacy with the President that it might obtain if the chairman were a member of the cabinet.

The views of Frank C. Munson, president of the Munson Steamship line, may be said to be typical of the more experienced and thoughtful executives.

"Until the shipping board decides to offer its ships for sale at a price around $100 or $125 per deadweight ton, I do not think that the government will be able to transfer the bulk of its ships to private interests," Mr. Munson said, reflectively. "The initial cost of a ship is the principal item in the total cost of operation. If this be far in excess of the figure at which the ships of foreign lines appear on their books—and it would be unless the shipping board reduces its scale to a much lower level—it will be almost impossible to operate the vessels successfully in competition with the foreign lines.

Likelihood of Retaliation

"The proposal to allow preferential duties on goods carried in ships of American registry will not accomplish the results desired. Shipping is international in its scope, and I believe that the adoption of such a plan would merely result in other nations resorting to retaliatory measures. The United States is unpopular enough with foreign nations, and I would not approve of any actions that would heighten this distaste.

"By increasing the number of commissioners on the board, I think that the shipping board will become less wieldy and will not be able to proceed with the dispatch and expedition that is necessary in dealing with problems pressing for solution. During my service at Washington as a member of the shipping control committee, I

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realized the need of close relations between the President and the shipping board. I think it would be advisable for the chairman of the shipping board to be designated a member of the President's cabinet or a department of marine created. The commissioners should be paid an annual salary large enough to attract men of the largest caliber, for we need men of this type to direct the shipping board—$25,000 would not be too much.

"It is gratifying to see the members of congress taking such a keen interest in marine affairs, and I am especially gratified to feel that our marine insurance companies are to be developed. I think every American shipowner would be glad if he could place the full amount of any risk at home. However, we would not like to see the foreign companies placed at a disadvantage because we desire to have the competition as a guarantee that the rates will not be excessive. The American bureau of shipping should be encouraged, but I do not think that there should be any compulsory classification of vessels. Freedom of action in all matters is preferable if the American shipowner is to obtain the best results in the operation of ships. Restrictions as to their sales will prove a handicap.

"The shipping board should leave to private enterprise the construction of new tonnage, and I do not think that the government should inaugurate any extensive building program to balance the fleet. I think that the individual lines are more intimately acquainted with the needs for ships of certain types than any board is, and I believe that the shipbuilding industry is desirous of operating on a normal scale.

"The Jones bill is a constructive measure, and embraces many progressive ideas. The members of the committee have worked indefatigably and they ought to be commended."

Should Fix Definite Date

According to P. A. S. Franklin, president of the International Mercantile Marine Co., the government should give certain definite assurances.

"One essential assurance that the shipping world should be given by the government is that on some specified date, the shipping board will withdraw from the shipowning sphere," Mr. Franklin said. "Without knowing this, the private companies cannot reasonably anticipate and plan for the future. It is my opinion that the ships should be offered for sale at such a figure as has been suggested by the American Steamship Owners' association. I do not believe that the bulk of the tonnage can be sold at the present high level of prices. The shipping board must fix its scale and terms and give a definite promise that they will be maintained for at least a certain period. The shipowner has no incentive to buy, if he has reason to feel that, by waiting a few months, he may obtain ships at a lower figure and on more reasonable terms.

"It does not seem to me that a system of preferential duties on goods carried in American ships would be helpful in giving permanency to the American merchant marine, as the other nations could easily retaliate by adopting similar legislation. Our position in this is economically weak, because our exports exceed in volume and value our imports, and if other nations retaliated we would lose more than we would gain.

"The shipping board should exercise control over maritime affairs, and I think that the chairman should be a member of the cabinet, either as secretary of marine or in his present capacity. I do not believe that it would be for the best interest to have the shipping board enter upon a building program to balance the fleet. Empowering the board to make loans from the construction fund to private interests for the purpose of enabling them to build ships of the finest types should prove helpful.

"The changes in the mortgage law, giving new strength to marine securities, should prove beneficial. The subordination of other liens to a first mortgage should make it easier to attract capital to shipping investments. There are many features in the Jones bill which are commendable and the measure is generally constructive. However, it is not complete."

While the shipowners foresee retaliation, it is rather significant that a substantial number of the more experienced operators of government owned ships and many prominent government officials favor it.

Joshua W. Alexander, the new secretary of commerce, is an outspoken advocate of the system. "The possibility that the adoption of a system of preferential duties might lead to retaliation should be borne in mind," Secretary Alexander said recently. "It might be better under the circumstances to notify foreign nations that the United States intends to put this policy into effect unless they will agree to abolish subsidies and preferential duties for their own shipping. By this means we would bring about co-operation and avoid retaliation. The present situation should not be allowed to continue. We should either impose preferential duties or use our power to prevent unfair discrimination by foreign powers."

Favors Preferential Duties

Among the more prominent operators who have recorded their favor for the plan is Capt. M. H. Tracy, president of M. H. Tracy & Co., and one of the officers of the United States Ship Operators' association.

"I hope that the United States will at least give this system thorough trial," Captain Tracy declared, in expressing his views of the marine policy. "Under such a plan, the American merchant marine flourished once, and I believe that it would prove beneficial now. It would stimulate shipping in American vessels and would afford cargoes for the great fleet of merchant ships which has been developed under the stress of war.

"It is encouraging to see congress insisting upon the Americanization of shipping. I believe that the shipping board should extend this to the point where the most liberal allocation of tonnage will be made to those companies, which are willing to confine their operations solely to ships which fly the American flag."

No objections have been raised in banking circles to the proposal of the shipping board that it be permitted to make loans, out of the construction fund, to private companies, desirous of building new ships.

The marine insurance companies, assured that they would not be prosecuted under the antitrust act for entering into pools, have formed two large syndicates for the purpose of covering hull and cargoes under the American flag. They heartily approve of the sections in the bill designed to assist them in the development of this important allied branch.

Several of the constructive features

Double Jinx Wins

TWO coffins and a wandering one-eyed black cat proved a combination that caused the crew of the little steamer PHOENIX *to refuse service. The* PHOENIX *plies the storm battered coast of north Washington and for days attempted to cross the bar of the Queets river. Time and again, rough weather prevented until the superstitious seamen blamed the ill luck on the hobo feline and the coffins which were consigned to an Indian village up the river. Finally the* PHOENIX *put back to Hoquiam when the sailors left, refusing to take further chances with so unlucky a cargo. At last accounts, the cat was still aboard.*

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of the Jones bill appealed strongly to H. H. Raymond, president of the Clyde-Mallory Steamship lines and president of the American Steamship Owners' association.

"The emphatic declaration at the very beginning of the bill: 'It is necessary for the national defense and for the proper growth of our foreign commerce that the United States shall have an American merchant marine of the best equipped and most suitable type of ships sufficient to carry the greater portion of its commerce, and serve as a naval or military auxiliary in time of war or national emergency,' and the further declaration it is 'the policy of the United States to do whatever may be necessary to develop and encourage the maintenance of such a merchant marine,' with the added provision that the shipping board is directed to consider this as 'the primary end to be attained' is splendid." Mr. Raymond said: "I do not recall that any such positive declaration of a purpose to encourage and sustain the American ocean shipping industry has ever before been proposed in congressional legislation.

"It is gratifying to note that the Jones bill declares for private ownership and operation by American citizens. I think this represents the sentiment of most of our people. However, the ships should be offered for sale at a figure, which will admit of successful competition with foreign shipowners.

"There are several provisions, which I am gratified to see incorporated in the bill. The section making the earnings of American vessels in foreign trade exempt from federal excess profits taxes for a period of 10 years should prove helpful. It is stipulated that an amount of earnings equivalent to the excess profits taxes that are remitted shall be expended in the construction of new tonnage in American yards, and this, recommended by the shipowners, should serve as a practical measure to encourage our shipbuilding industry.

"Recognition that preference in the sale or allocation of government owned steamers should be given to concerns already established in this business will assist the shipowners. However, I would emphasize that the government should retire from shipping as soon as it can."

General Support of Bill

In spite of specific objections, the bill generally has popular approval. How carefully the framers of the act have combined the diverse suggestions may be judged from the anomalous picture of shipowners, shipbuilders and operators lending their support to virtually every feature of the bill. Labor has indorsed the draft as it was reported. In a broad sweep, the national marine policy may be said to be aggressive, protective and constructive. Whether the teeth of the aggressive sections will be extracted by the senate is a matter of speculation, for it must be admitted that the snares for international complications are inherent in the provision for the introduction of a system of discriminatory duties. The practical end of the shipping board's building program has been decreed. It is stipulated that, while the board may create a construction fund from the net profits of operation to provide money to build new tonnage or make loans to enable private interests to construct ships of approved types, not more than $50,000,000 should be devoted to new production. The purpose of the senate in permitting the shipping board, which has already drawn upon the treasury to the extent of more than $3,000,000,000, to contract for new tonnage was to make possible a thorough test of the motorship. It is understood that the shipping board will build a fleet of 20 ships of this type, fitted out with diesel engines.

The $50,000,000 is expected to be more than adequate, for the shipping board has already contracted for more than 30 engines. Two were purchased from Burmeister & Wain at Copenhagen, while 26 were ordered from McIntosh & Seymour and 10 from Skandia-Pacific. The money remaining after provision has been made for the hulls may be loaned out to American lines desirous of building new vessels.

In the evolution of the Jones bill, which took the Greene bill as a nucleus and fashioned around the measure previously passed by the house of representatives in November many new and revolutionary features, politics did not play a part. Republicans and Democrats united in an effort to define a policy, which would enable the shipping interests to keep the ships afloat on the seven seas under the American flag. Taking the view that it was no longer a question of acting to create a fleet of merchantmen to carry the foreign trade of the nation but rather the problem of making it possible for the ships to survive coming competition, the committee included several protective measures—one of which is expected to have hard sledding before the senate.

Every Interest Recognized

In the bill, practically every interest finds something for which it fought.

Although the shippers lost their fight to have the ships sold at a figure around $100 a deadweight ton, they find some solace in the adoption of the plea that the earnings of vessels be exempt for 10 years from the excess profits taxes. While the earlier drafts of the bill provided for a 10 per cent depreciation annually on ships engaged in foreign trade, this was altered. A board, composed of the chairman of the shipping board, the secretary of commerce and the secretary of treasury will fix the depreciation rate on all shipping board vessels, and ships built by private interests after the signing of the armistice. Had the first concession been adopted, American shipowners frankly stated that the existing differentials in favor of ships of foreign registry would have been wiped out; the tax exemption, alone, will more than offset the advantage that the lower wage scale gives the owners of foreign steamers.

The shipbuilders emerged with flying colors. Their objections to the disposal of the merchant fleet at what they termed a sacrificial figure prevailed. They fought successfully the provision requiring the sale of all ships within the next two years to private interests and were mainly responsible for the sales policy. The most drastic section in the bill—directing the President to abrogate all commercial treaties, which prevent the United States from granting preferential duties on goods imported in American ships—was included at the instance of the shipbuilders. They claimed that under the old law in force shortly after the birth of the American republic which granted 10 per cent lower duties on goods carried in American ships, the merchant marine flourished. Upon the plea that the adoption of this scheme would provide bountiful cargoes for the ships afloat and would insure steady operation for the shipbuilding industry, because it would result in orders for new tonnage, the shipbuilders won out. This section

A Bargain in Shoes

BECAUSE of the turmoil in Russia, a shipment of 250,000 *pairs of American shoes was landed in Seattle recently after a cruise across the Pacific and back. The trouble in Russia netted the owners of the shipment about* $1,000,000 *additional profits. The shoes were shipped to Vladivostok two years ago bnt because of the conditions in Russia, payment was not forthcoming. The shipment lay in storage in the Siberian port and was brought back to Seattle by the Japanese-built steamship* EASTERN DAWN. *It is estimated that the shoes are worth at least* $1,000,000 *more than when they began their journey to Siberia. The manifest did not attempt to fix the worth of the consignment but the documents recorded the shipment as "extra valuable."*

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arouses the question of retaliation on the part of foreign nations.

The operators are content because the shipping board will not be directed to sell the vessels within any specified time. The "unsold ships" are to be operated by American companies, and, although preference is to be given in the allocation of vessels to private interests which have previously participated in the different trade routes, it will be possible for the operators, who desire to buy ships, to do so.

The marine insurance companies will be permitted to form pools for the purpose of covering, by co-operative action, the hull and cargo risks, without making themselves liable to prosecution under the antitrust act. The shipping board will retire from the field, as it will no longer insure its own vessels. Millions in premiums will be diverted from the government bureau to the coffers of the American underwriters, who have enjoyed a rapid growth in the marine sphere.

Labor Wins Favor

Labor is happy, because the seamen's act was not only recognized but fortified by two new provisions—one insuring jury trial for seamen offenders and the other requiring masters of foreign vessels to pay upon demand of any foreign seaman one-half of the wages due him when the ship drops anchor in any American port. Thus, according to its advocates, the foreign sailor will be able to force the payment of the American wage scale, by deserting his vessel and reshipping foreign. The section providing that an American might become an able seaman after serving one year at sea, was modified to meet the objections of the labor element. However, it will operate so that an American boy may get this rating at the expiration of this time if he can pass the examination.

The spectacle of five marine groups pushing a single measure is rather bizarre, but the reasons are manifest.

The rallying cry has been to "Americanize" the merchant marine. The sale of ships, with registers in excess of 6000 tons, to foreigners has been expressly forbidden. The American Bureau of Shipping is given official recognition as the classification society. The coastwise trades, as heretofore, are closed to foreign ships, and a further provision is made that at least 75 per cent of the stock in an American company must be held by American citizens.

In addition to the section, which gives warning to the world that the United States proposes to favor its own carriers by making it possible to grant preferential duties, the Jones bill has included another discriminatory plan. Though its practicability has been questioned, this section prohibits railroads from entering into agreements with foreign steamship lines for reduced rates in the carriage of freights or passengers, but sanctions such an arrangement between the common carriers and American shipping lines. Inasmuch as it is generally known that the American railroads have long since discarded the rate-cutting practice to obtain big assignments of freight radiating to or from the ports, it is not thought that any unusual advantage will be obtained for the American merchantmen.

The ocean mails are to be carried by American ships, and the government is directed to pay adequate sums for these services. Recognition is given of the fact that the government pay for these services is inadequate, and the postmaster general is empowered, in consultation with the chairman of the shipping board, to enter into new contracts.

In order to be considered an American company, the government would require "at least 75 per centum of the value of all its securities are at all times bona fide owned by citizens of the United States, free from any trust or fiduciary obligation in favor of any person not a citizen of the United States."

The section of the bill, which is expected to prove the storm center for the opposition, reads: "That in the judgment of congress, articles or provisions in treaties or conventions to which the United States is a party which restrict the right of the United States to impose discriminating customs duties on imports entering the United States in foreign vessels and in vessels of the United States, and which also restrict the right of the United States to impose discriminating tonnage dues on foreign vessels and on vessels of the United States entering the United States should be terminated, and the President is hereby authorized and directed within 90 days after this act becomes law to give notice to the several governments, respectively, parties to such treaties and conventions, that so much thereof as imposes any such restrictions on the United States will terminate on the expiration of such periods as may be required for the giving of such notice by the provisions of such treaties and conventions."

Board Given New Powers

The first drafts of the bill did not include the provision for discriminating tonnage dues. It is anticipated that an effort will be made to lower the Panama canal tolls on American ships, if the section is not killed in congress. Statistics, compiled by American companies operating through the canal, show that 9 per cent of the total annual operating expenses have been paid out in tolls to permit the passage of ships through the locks of the canal zone.

The shipping board will be clothed with broad and ample powers so that it may exercise almost as much power as the marine department of the British board of trade. Its personnel is to be increased from five to seven members, who are to be paid $12,000 annually. Two are to be appointed for one year, the remaining five for terms of two, three, four, five and six years. The states touching on the Atlantic and Pacific oceans are to have two commissioners, respectively, while the gulf states, the Great Lakes and the interior are to be represented by one member each. Although the fact seems to have escaped the attention of the public, no provision has been made as to the political affiliation of the commissioners. The President is empowered to appoint the chairman, and to remove any member for inefficiency, neglect of duty or malfeasance.

Made Supreme Authority

It is directed to "make or change at will such rules and regulations relating to vessels and foreign and coastwise shipping, not in conflict with existing law as will adjust or meet general or special conditions unfavorable to such shipping, whether in any particular trade or upon any particular route or in commerce generally and arising out of or resulting from foreign laws, regulations, or rules or from competitive methods or practices employed by owners, operators, agents or masters of ships under foreign flags, and existing rules or regulations affecting foreign or coastwise shipping and trade, other than those relating to the public health and the steamboat inspection service, heretofore issued by any government department, bureau or agency may be suspended, modified, or annulled upon request of the board." The authority of the board in shipping matters is openly recognized, and no governmental department may promulgate any rule or regulation without first obtaining its approval. Disputes are to be referred to the President for settlement.

As trustees of the fleet of merchant ships, the board is directed to determine the services which it thinks should be maintained. In order to accomplish this, it is directed to sell if responsible parties are willing to buy ships. If private interests cannot be induced to purchase or charter the steamers, the board may operate the vessels until the business is developed so that the venture may be sold. Preference must be given in sales or charters to persons "who have the support, financial or otherwise, of the domestic communities primarily interested in such lines" or to American citizens maintaining a service to or in the direction of the world market considered.

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Marine Exhibit Scores Success

Great Display of Products Required in Ship Construction and Operation Arouses Tremendous Interest—Exposition to Be Held Next Year

DESIGNED to prove the interest held by the American people in their new fleet of oceangoing freight carriers, the first national marine exposition, held in the week of April 12-17, was an unqualified success. The exhibit took rank immediately with those held by other industries for years past and demonstrated conclusively the desire of the public to witness the upbuilding of America's maritime industries.

The complete success of the inaugural exposition insures the holding of another exhibit in the spring of 1921 and probably annually from that time. Plans now under discussion call for the exposition being duplicated in other cities beside New York as a means of satisfying the undoubted national demand for further opportunities to broaden the public's knowledge on marine subjects.

The exposition afforded the first chance ever offered in this country to see a compactly grouped display of the great variety of products involved in the construction and operation of a vessel. Ships from their peculiar position of serving as homes for their passengers and conveyances for both goods and people, use a greater range of products than any other unit. The exposition as a result carried an appeal to the public far broader than is possible in shows of other specialized fields.

On several nights during exposition week, the great crowds forced the early closing of the doors and the National Marine league which fostered the show, has announced that more than 61,000 paid admissions were received, while the exhibits probably were inspected by 70,000 persons.

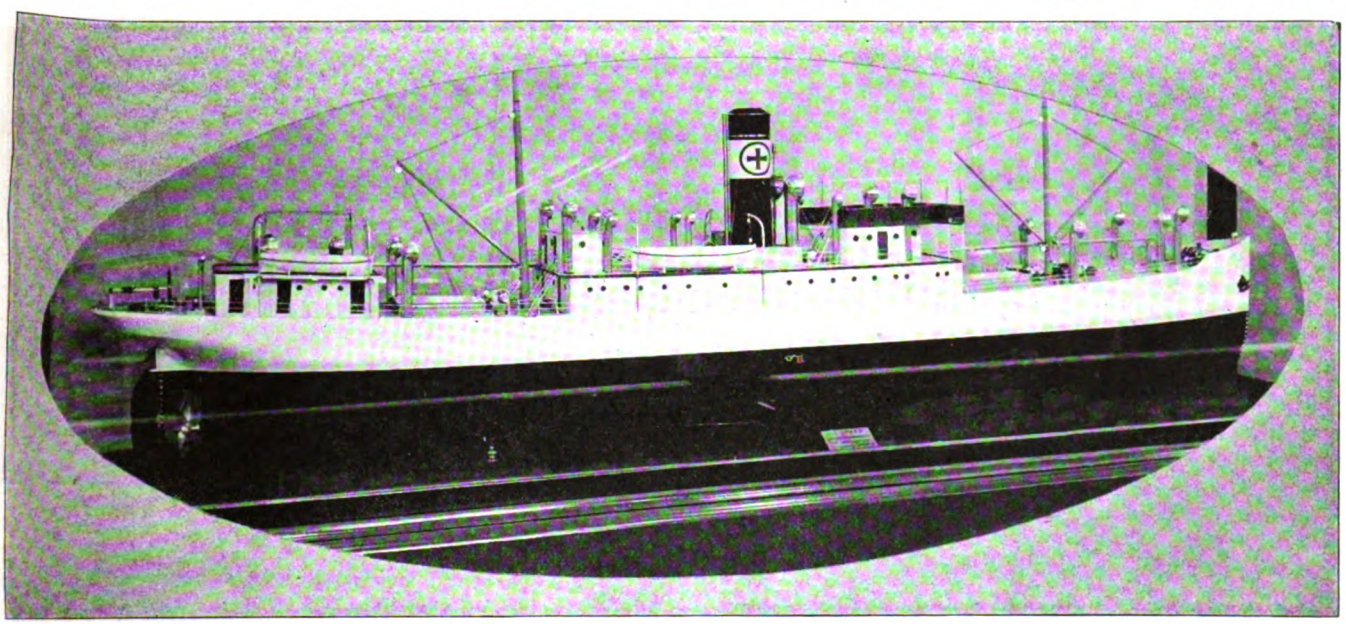
The number of exhibitors participating was a clear indication of the widespread hold this relatively new market has taken on the country's manufacturers. Close to 200 firms were represented by displays, the first program for the exposition being expanded to include three floors instead of only the main floor of the Grand Central palace as originally planned.

Exhibits included unusually complete displays of equipment, much of which was in operation. Awakened interest of American engineers in the marine field was reflected in the number of new devices placed on display and designed to increase the safety of ship operation and to effect economies.

Companies employing booth space included a representative number of the leading shipbuilders, shipowners and operators as well as the many industries allied with shipping. A complete record of the companies exhibiting was published in THE MARINE REVIEW for May, together with an outline of the character of the main displays.

Opening ceremonies were held on board the steamer WEST ALSEK of the Oriental Navigation Co. The company a few minutes later entertained officials and guests at a luncheon. Joshua W. Alexander, secretary of commerce, pulled the whistle cord which announced the formal opening. At the luncheon, addresses were made by Secretary Alexander, Admiral W. S. Benson, new head of the shipping board, P. H. W. Ross, president of the National Marine league, and Murray Hulbert, commissioner of New York docks. At the annual banquet of the league held on April 13, Admiral Benson was the principal speaker. He made his first public appearance since assuming the direction of the shipping board. He emphasized the importance of stimulating an even greater public interest in the merchant marine and of manning the fleet with American seamen. He discussed also the necessity for being on guard against the active propaganda which has in the past done so much to retard America's maritime development and which he believes is endeavoring to render a similar disservice now.

"The only way to win the support of all Americans to the merchant marine," he said, "is to make the opportunities for advancement in our ships so great that American boys in large numbers will be attracted to again enter seafaring life as they did many years ago." Henry R. Sutphen, vice president of



SHIPPING HAS MADE A PLACE FOR ITSELF IN AMERICA'S HEART AND MIND
Model of S.S. ORMES, fruit and passenger steamer, shown at marine exposition

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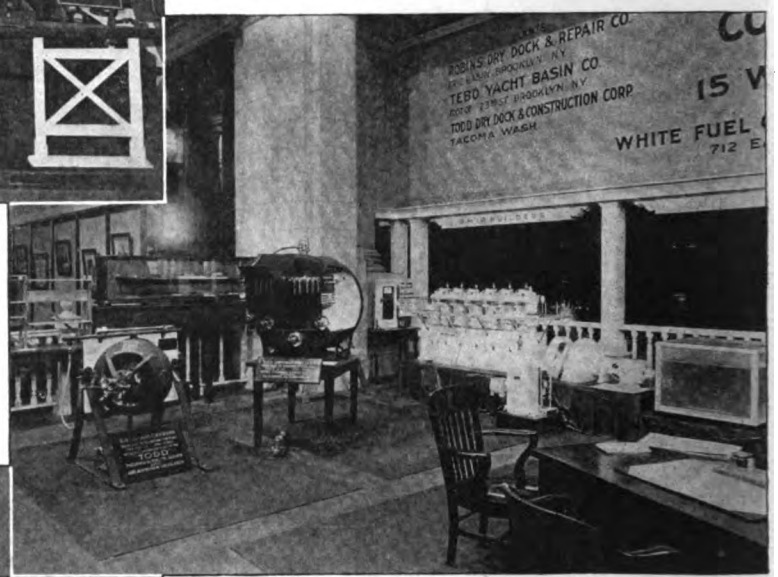
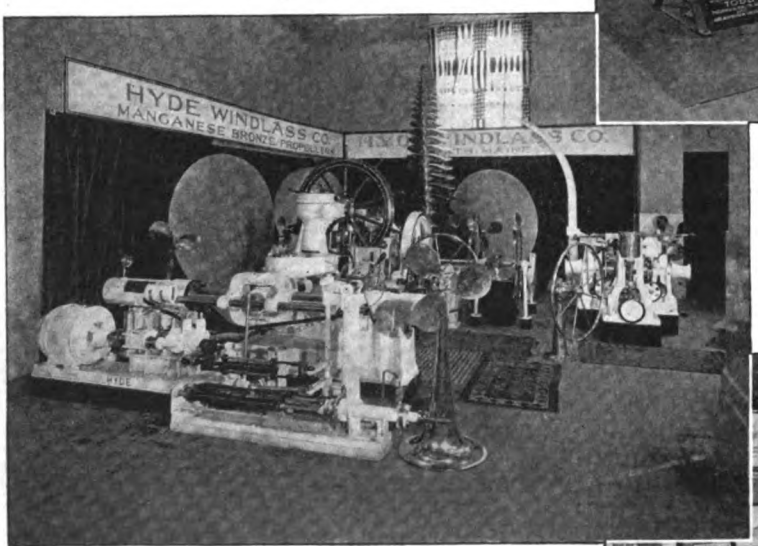
Exhibits From Many Industrial Fields

Application of welding to ship work has grown rapidly and the importance of this development was emphasized in the display of the Oxweld Acetylene Co. covering some of the practical uses of this process. Displays included blowpipes, welding and cutting tables and specimens of finished welds, including a ventilating cowl, deck rail, ladder, deck collar and angle work



Mechanical fuel oil burner and air admission regulator, together with a section of a Scotch boiler with oil burning equipment and superheater formed the exhibit of the White Fuel Oil Engineering Corp. Diesel marine-type engine with electric drive shown in background



Complete line of bearings for marine use was exhibited by Albert Kingsbury

Complete display of propellers and of steering equipment was made by the Hyde Windlass Co. In the foreground is shown a hydroelectric steering gear

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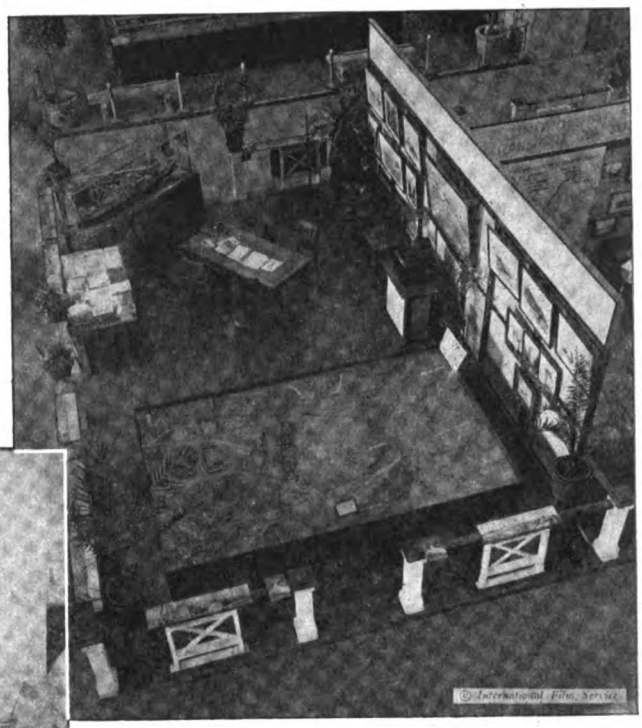
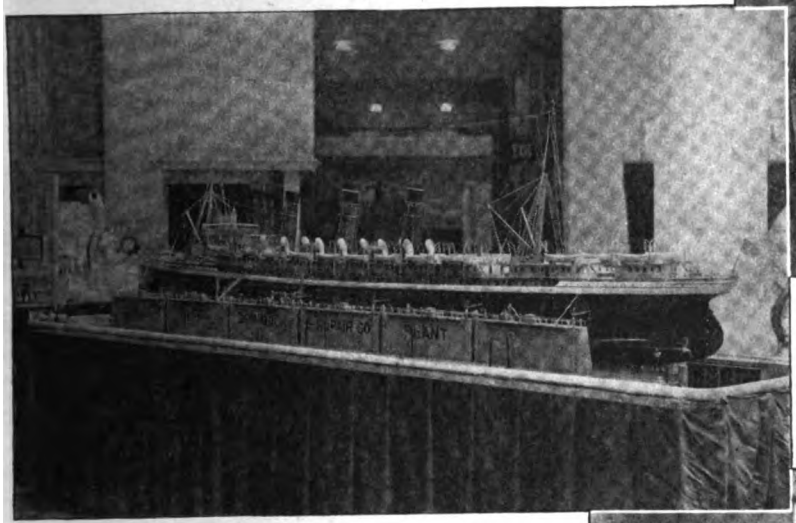
Operating Displays Aroused Interest

Model of an ocean liner which was raised and lowered in a working drydock. This portion of the exhibit of the Todd Shipyards Corp. was made by craftsmen of the Robins Dry Dock & Repair Co. The dock measured 11 feet 6 inches and the steamship 12 feet 3 inches. Reduction gearing was arranged underneath the tank to permit the operation of the dock to be more readily followed

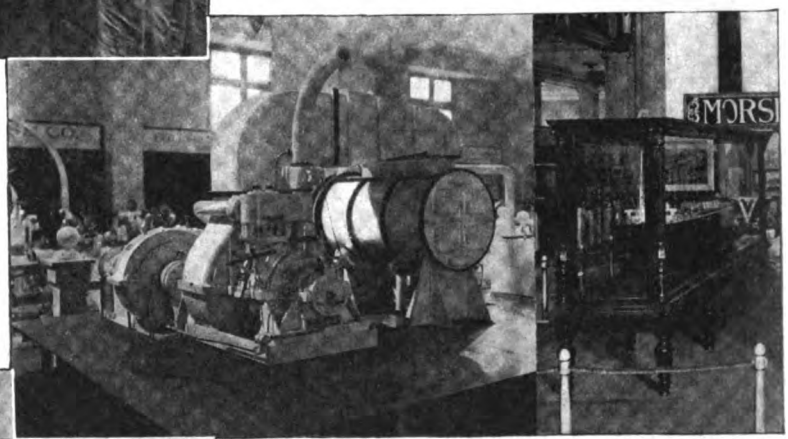


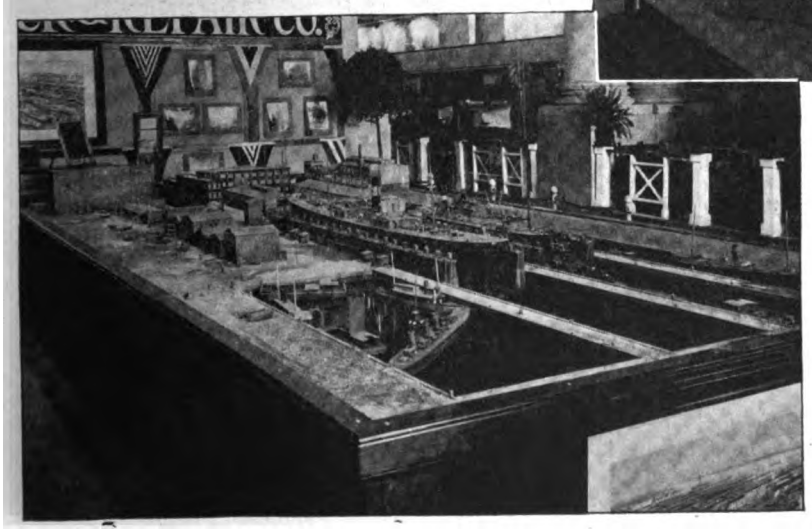


Model of Newark Bay shipyard exhibited by Submarine Boat Corp.

Large replica of S. S. Mauretania under glass

Section of a ship engine room showing turbine with gearing in position. Exhibit by Tietjen & Lang Dry Dock Co.





Large repair yard of the Morse Dry Dock & Repair Co. was reproduced in miniature. The company's 30,000-ton floating drydock was operated demonstrating the ease with which large vessels are handled. This dock held a model of the S. S. Satsuma, the other dock holding a replica of the tanker John D. Archbold

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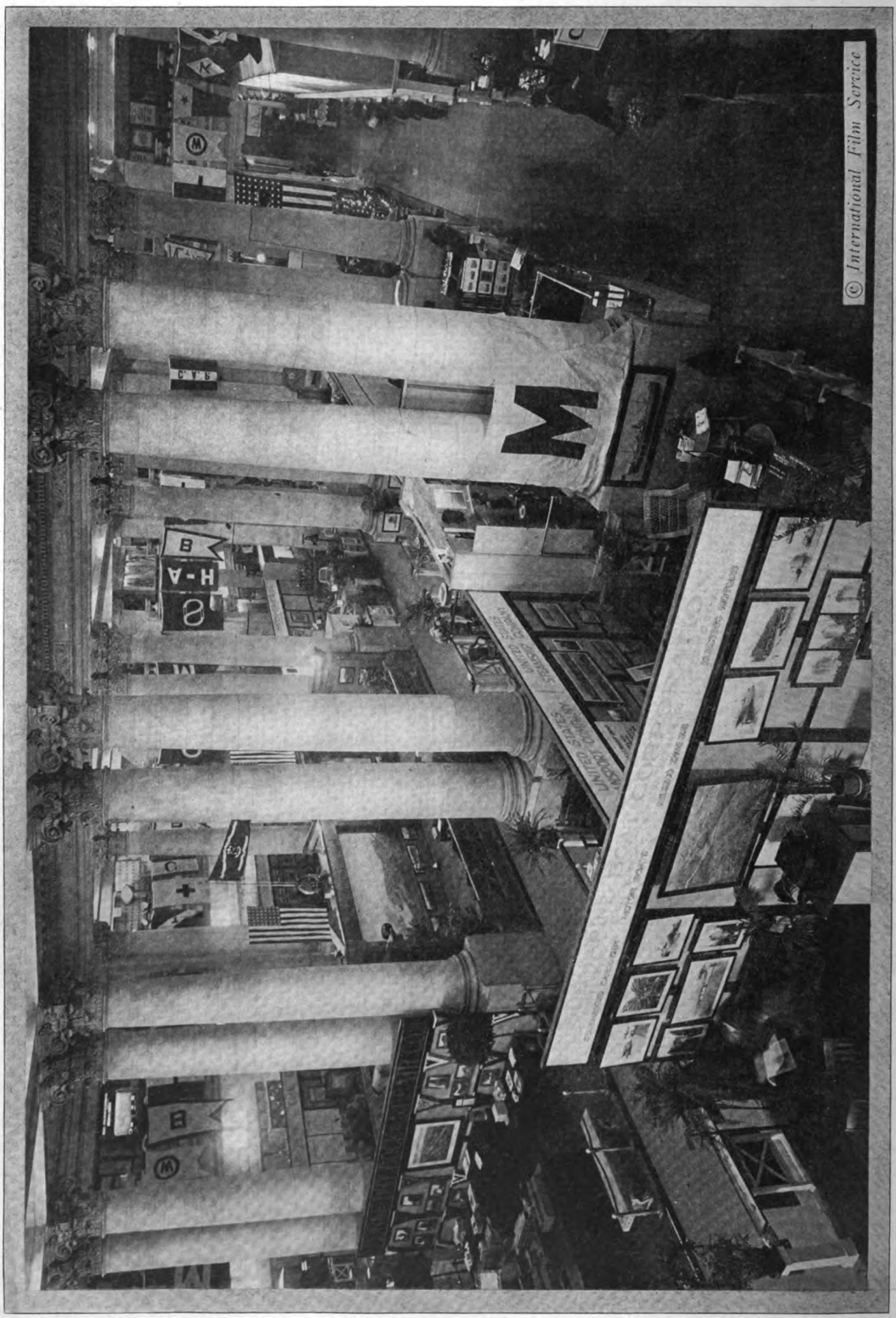

EXHIBITS AT THE MARINE EXPOSITION IN THE GRAND CENTRAL PALACE, N. Y., WERE MODELS OF EFFECTIVE DISPLAY

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the Submarine Boat Corp., Newark, N. J., gave an outline of the growth of American shipbuilding and the methods and possibilities of fabricated ship construction. Capt. Irving L. Evans, head of the recruiting service of the shipping board, gave an outline of the work of that service.

Lectures given daily throughout the week embraced a wide range of subjects and proved of especial interest. Holden A. Evans, president of the Baltimore Dry Dock & Ship Building Co., Baltimore, spoke on "Shipbuilding and the Merchant Marine"; Walter McFarland, Babcock & Wilcox Co., New York, on "Use of Boilers for Generating Steam"; B. S. Beach, General Electric Co., Schenectady, N. Y., on the electric drive; Parker W. Robinson, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., on turbines and turbine reduction gears; Lindon W. Bates, on "Colloidal Fuel"; Capt. Paul Foley, of the shipping board, on "Bunkering Problem of the American Merchant Marine"; L. S. Willard on "Story of Oil"; Dr. Charles Edward Lucke, Worthington Pump & Machinery Corp., New York, on "Motorships."

Moving pictures illustrating the majority of elements of ship construction and operation were on continuous display.

Government departments united in making the exposition a success and large and interesting exhibits were made.

Set 1920 Wage Scale for Lake Ships

WAGE schedules for seamen on the Great Lakes have been announced by the Lake Carriers' association. Increases are established in all grades, the monthly wage of able bodied seamen being advanced from $100 in 1919 to $130, the highest level in the history of the lakes.

Importance of the lakes as a training field for the new American merchant marine is emphasized in a statement accompanying the association's wage report, which included a reaffirmation of the open shop principles which the shipowners have successfully supported for years. The complete report follows:

LAKE CARRIERS' ASSOCIATION

Minimum Rates of Wages Recommended for Opening of Season, 1920 And Until Further Notice

The rapid upbuilding of the American merchant marine has made it imperative that we should give our attention to educating men for the seafaring life. During the war we demonstrated that here on the Great Lakes we have the facilities and opportunity for doing this, as evidenced by the training of naval cadets that were assigned to our ships to gain experience. Our larger ships carry at least six able seamen in the deck department. An able seamen is competent to steer, and, hereafter, each able seaman will be required to stand at least two hours' trick at the wheel during his watch on deck. The officer of the ship will be responsible for seeing that this rule is rigidly carried out. In case it is impossible on any voyage to get able seamen sufficient to do this, and you have any member of your deck crew who is competent to perform such duties, and does stand his 2-hour trick at the wheel, he shall be paid able seamen's wages until such time as you are able to get able seamen certificated men to fill the vacancy. The officers of the ship shall decide that part of a man's watch on deck when he shall be required to stand trick at the wheel.

The old position of wheelsman and watchman is abolished, inasmuch as the certificate of inspection does not call for them.

New Lake Wage Scale

	Per Month
Chief cooks—	
Vessels over 4000 gross tons	$160
Vessels under 4000 gross tons	145
Boatswain	140
Deck engineers	140
Able seamen	130
Firemen, oilers, watertenders	130
Ordinary seamen	90
Coal passers	87.50
Second cooks	100
Porters	90

BARGES

Mates on barges of the smaller class not less than $10 per month more than seamen on the same vessels; and donkeymen not less than $5 more than seamen.

	Per Month
Mates on tow barges of the larger class	$155
Able-bodied seamen on tow barges	130
Engineers on tow barges carrying towing machines	155
Cooks on tow barges $5 per month more than seamen on same barges.	
Ordinary seamen on barges	90

GENERAL

Sailing wages to be paid during fitting out.

Sailing wages of seamen, firemen and oilers to be paid until the vessel is laid up. Vessel is considered laid up when steam is turned off.

Two porters to be carried on all A and B class boats.

A bonus of $5 per month will be paid to all unlicensed men who have fitted out a vessel, remained on board all season and laid her up in the fall.

Resolution

The following resolution was adopted unanimously by the Lake Carriers' association, and as it admits of no deviation the officers of our ships in all departments must govern themselves accordingly.

The experience of the shipowners, managers and licensed officers for the past years has demonstrated the necessity of what is referred to as the open shop principle, in order to give that control and direction of the ships which is required for the equal good of the owner, the employes of the ships and the dependent trades. And so it is resolved:

1. That the owners of ships on the Great Lakes do now declare that the open shop principle be adopted and adhered to on our ships.

2. That the Lake Carriers' association stands for the foregoing principle.

3. That the matter be referred to the executive committee with full power to act and carry out this principle.

4. That it should be the aim of the committee in the means they shall adopt to recognize a fair and equitable rate of wages, to insist on such regulations as shall promote the comfort and well-being of the employes, shall put the discipline of the ship in the hands of the executive officers and tendering liberal appropriate wages and conditions, requiring in response appropriate, diligent and prompt service from the members of the crew.

5. And at this meeting, representing 91 per cent of the tonnage of the association, as a definite and specific support to the committee it is voted to adhere to and observe this action, referring also any and all special cases to the committee.

WILLIAM LIVINGSTONE,
President.

Lake Erie Receipts

Out of a total of 230,854 tons shipped from upper lake ports in April, Lake Erie ports received 29,776 tons as shown by figures compiled by THE MARINE REVIEW. The balance on dock May 1 was 6,192,101 tons compared with 5,681,085 tons on May 1, 1919. Detailed figures are:

Port	Gross tons
Buffalo	.....
Erie	.....
Conneaut	.....
Ashtabula	11,095
Fairport	.....
Cleveland	9,655
Lorain	.....
Huron	.....
Toledo	.....
Detroit	9,026
Total	29,776

Lake Michigan Receipts

Receipts of ore at Lake Michigan ports in April were 30,516 gross tons as shown in the following record by ports:

Port	Gross tons
So. Chicago, Ill.	9,719
East Jordan, Mich.	....
Boyne City, Mich.	....
Milwaukee	....
Indiana Harbor, Ind.	20,797
Gary, Ind.	....
Total	30,516

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Marine Business Statistics Condensed

New York Port Traffic

Statistics show that the commercial ocean tonnage which has entered and cleared the port of New York since the armistice has been smaller than during either 1912, 1913 or 1914, although since the beginning of 1920 there has been a decided gain. The commercial traffic during 1918 was at the lowest ebb, due to the fact that so many merchant ships were in the military organizations of the belligerent governments. The entrances at New York from foreign ports during 1919 were more than 40 per cent greater.

On Dec. 31, 1919, a total of 5222 ships of 4,263,073 gross tons claimed New York as their home port.

NEW YORK PORT TRAFFIC 1920
(Exclusive of domestic)

Month	Entrances No. ships	Entrances Net tonnage	Clearances No. ships	Clearances Net tonnage
January	372	1,143,126	410	1,450,778
February	377	1,174,913	329	1,054,269
March	440	1,322,013	410	1,369,829
April	431	1,302,177	386	1,243,000

VESSELS ENTERED THE PORT OF NEW YORK
1909–1919

Year	Foreign No. ships	Foreign Tonnage (net)	Coastwise No. ships	Coastwise Tonnage (net)	Total No. ships	Total Tonnage (net)
1909	4456	13,370,023	2779	5,509,378	7235	18,879,401
1910	4484	14,137,995	3477	6,795,283	7961	20,933,278
1911	4436	14,397,442	3317	6,340,511	7753	20,737,953
1912	4512	14,932,339	3118	5,925,370	7630	20,857,709
1913	4741	15,957,960	2544	5,257,899	7285	21,215,859
1914	4524	14,985,765	2459	5,437,533	6983	20,423,298
1915	5259	13,385,366	2842	6,244,865	8101	19,630,231
1916	5487	14,330,700	2866	5,924,854	8353	20,255,554
1917	4927	12,607,452	2969	5,954,839	7896	18,562,291
1918	4243	10,379,140	3338	5,469,775	7581	15,848,915
1919	5261	14,722,508	2196	5,135,045	7457	19,857,553

Philadelphia Traffic

Traffic statistics indicate that the importance of Philadelphia as a foreign trading port has been gradually increasing ever since the armistice. During 1918, a total of 729 ships, representing 2,043,841 net tons cleared that port. The clearance during 1919 increased to 1272 ships of a total of 3,315,597 net tons. It is recorded that 141 of the vessels clearing in 1918 departed in ballast, the remaining ships carrying out 1,668,186 tons of cargo. In 1919, a total of 277 ships cleared in ballast while the others carried 2,675,562 tons of cargo. Of those clearing in ballast in 1918, a total of 63 were under the American flag, while the ships under the American flag clearing in ballast in 1919 increased to 175 vessels.

A total of 578 foreign ships and 151 American ships cleared Philadelphia in 1918, and 632 foreign and 188 American ships entered the same year. In 1919, a total of 696 foreign ships and 576 American vessels cleared Philadelphia, while 637 foreign and 509 American ships entered.

PHILADELPHIA PORT TRAFFIC 1920
(Exclusive of domestic)

Month	—Entrances— No. ships	—Entrances— Net tonnage	—Clearances— No. ships	—Clearances— Net tonnage
January	59	139,941	67	199,396
February	67	184,753	72	230,766
March	91	223,082	65	171,724
April	88	205,694	89	237,730

PHILADELPHIA PORT TRAFFIC
(Overseas only)

Year	—Entrances— No. ships	—Entrances— Net tonnage	—Clearances— No. ships	—Clearances— Net tonnage
1918	820	2,021,794	729	2,043,841
1919	1146	2,790,532	1272	3,315,597

New Ship Firms

New marine companies organized in April carried authorized capital of $178,835,000, the largest indicated investment of any month since the beginning of the European war. This compilation as made by the *Journal of Commerce* shows that the total for the first four months of this year exceeds that for the entire 12 months of 1919, which in turn held the record for recent years. The bulk of the April total came from the incorporation in Delaware of the Garland Steamship Co. This firm has 1,500,000 shares of no par value but in reckoning the April indicated investment, the shares are assigned the value of $100.

The record of incorporations for April and March follows:

MARCH, 1920

American European Line, Inc., Del.	$ 100,000
Am. Coastwise Steamship Co., Del.	5,000,000
Am. Stand. Shipfittings Corp., Del.	800,000
Am. Merchant Marines, Inc., Del.	5,000,000
Brown Navigation Co., The, Del.	150,000
Cananova Steamship Corp., Del.	525,000
Cayo Mambi Steamship Corp., Del.	525,000
Disappearing Propeller Boat Co., Del.	1,200,000
European Navigation Co., Del.	1,500,000
Farragut Steamship Corp., Del.	1,000,000
Independent Steamship Co., The, Del.	500,000
International Coal Transportation Corp., Del.	2,700,000
Lord Drydock Corp., Del.	20,000,000
New York & Baltimore Inland Transportation Co., Del.	300,000
Northsea Co., Ltd., Del.	350,000
Pequot Steamship Co., Del.	1,500,000
Perhaspake Towing & Transportation Corp., Del.	2,000,000
Russian, Slavic & American Steamship Corp., Del	3,500,000
Submarine Exploration & Recovery Co., The, Me.	10,000,000
Swiftsure Oil Transport, Inc., N. Y.	200,000
Seattle Shipbuilding & Dry Dock Corp., Del.	5,000,000
Total	$61,850,00

APRIL, 1920

Armenia Steamship Co., Del.	$ 1,500,000
Ardmore Steamship Corp., Del.	200,000
Atlantic & Gulf Transportation Co., Del.	1,000,000
Blue Star Navigation Co., Del.	1,000,000
Chillicothe Navigation Co., Del.	300,000
Columbia Dry Dock & Engine Corp., Del.	7,000,000
Commercial Steamship Co., Del.	500,000
Coosa Steamship Co., Del.	500,000
Dolphin Line, Inc., N. J.	75,000
East Port Steamship Co., Del.	1,750,000
French-American Line of New York, N. Y.	5,000,000
Garland Steamship Corp., Del.	150,000,000
Haybron Steamship Co., Ltd., Del.	100,000
Hull-Pope-Yott Corp., Del.	110,000
Jeannette Steamship Co., Del.	2,500,000
Livermore, Rojas & Co., Inc., Del. (own and operate)	2,500,000
Monongahela Navigation Co., Del.	400,000
Moshulu Navigaton Co., Ltd.	400,000
Neuse Steamship Co., Del.	1,000,000
New Hamburg-American Line of New York Inc., N. Y.	1,000,000
Ocean Navigation & Transportation Co., Del.	1,000,000
Oconee Steamship Co., Del.	1,000,000
Total	$178,835,000

Panama Canal Traffic

Whole cargoes handled through the Panama canal during the last two months for which records are now available, follow:

FEBRUARY, 1920

ATLANTIC TO PACIFIC

	No. of cargoes	Tons
Fuel oil	4	34,127
Case oil	4	28,130
Coal and coke	5	24,312
Sulphur	1	8,900
Mixed and general	57	205,685
Total		301,154

PACIFIC TO ATLANTIC

	No. of cargoes	Tons
Nitrate	47	259,635
Flour	10	75,318
Other food products	6	37,436
Lumber	11	28,256
Mixed and general	30	78,233
Total		400,645

SUMMARY

Number of commercial vessels	208
Registered net tonnage of above	579,842
Total cargo handled	701,799
Vessels without cargo	33

MARCH, 1920

ATLANTIC TO PACIFIC

	No. of cargoes	Tons
Fuel oil	5	44,922
Petroleum	4	36,298
Steel products	2	13,414
Coal	2	10,849
Naphtha	1	9,500
Refined oil	1	8,202
Phosphate rock	1	7,700
Coke	1	4,360
Mixed and general	72	293,228
Total		428,473

PACIFIC TO ATLANTIC

	No. of cargoes	Tons
Nitrate	37	192,506
Flour	5	35,282
Cold storage food products	4	27,373
Miscellaneous food products	1	3,112
Lumber	6	17,273
Lubricating oil	1	11,000
Mixed and general	50	179,497
Total		466,043

SUMMARY

Number of commercial vessels	235
Registered net tonnage of above	676,270
Total cargo handled	894,516
Vessels without cargo	42

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Marine Business Statistics Condensed

Get Better Dispatch

Improvement in ship turn around in European ports is slowly being made. The performance of American merchant ships in February, as recently reported by the London office of the shipping board, shows that this improvement did not extend to British ports. The average stay in ports in the United Kingdom in February was 25.7 days, an increase of 0.9 days over January. Delays in January were 4.5 days longer than in December.

In ports of continental Europe, 188 shipping board steamers during February were held on an average 13.1 days against 15.1 in January and 14.1 in December. Of the more important ports, Antwerp set the best record of quick dispatch with an average of 8.9 days on 12 vessels while Rotterdam showed an average of 9.2 days on 15 vessels, a marked improvement over January with an average of 15.7 days.

The following tables compiled by the shipping board at London and published in the *Journal of Commerce* show in detail the record for the principal ports of the United Kingdom and of Europe.

The record of British ports:

RECORD OF BRITISH PORTS

	—January—		—February—	
Ports	No.	Average days in port	No.	Average days in port
London	7	32.1	19	33.5
Liverpool	25	33.4	16	29.1
Swansea	1	22.0	9	23.7
Manchester	8	30.2	7	34.4
Glasgow and Greenock	5	23.4	6	31.5
Hull	3	30.0	6	17.8
Barry	4	14.0	4	18.2
Tyne	2	24.0	4	24.2
Fowey	5	12.4	4	12.0
Cardiff	3	32.3	3	20.3
Middlesbrough	..	....	3	14.6
Grangemouth	2	14.0	2	21.5
Newport	3	17.6	2	11.0
Southampton	..	....	2	13.0
Aberdeen	1	12.0	1	11.0
Bristol and Avonmouth	8	14.7	1	4.0
Dundee	..	....	1	2.0
Plymouth	..	....	1	30.0
Port Talbot	2	23.0	1	17.0
Sunderland	..	....	1	34.0
Total—all ports	91	24.8	93	25.7

The record of European and Mediterranean ports:

RECORD OF EUROPEAN AND MEDITERRANEAN PORTS

	——Vessels sailing in——			
	—January—		—February—	
Ports	No.	Average days in port	No.	Average days in port
Copenhagen	6	16.8	6	19.1
Fredericia	1	7.0	..	....
Bergen	1	3.0	2	6.0
Christiania	3	9.6	3	8.6
Gothenburg	3	5.0	7	13.5
Malmo	2	5.5	1	9.0
Oxelesund	2	10.0	2	6.6
Stockholm	4	15.7	7	12.0
Hango	1	17.0	5	15.4
Danzig	1	31.0	1	16.0
Hamburg	17	14.4	14	10.1
Bremen	5	16.6	5	6.0
Nordenham	1	9.0	3	8.3
Rotterdam	17	15.7	15	9.2
Antwerp	18	11.6	12	8.9
Ghent	..	....	1	3.0
Dunkirk	5	18.2	3	14.3
Calais	1	20.0	1	14.0
Havre	11	29.5	19	28.0
Brest	9	9.4	1	16.0
St. Nazaire	3	15.3	2	12.0
Nantes	3	6.3	2	11.0
La Pallice	5	24.0	1	11.0
Bordeaux	9	22.2	5	18.0
Marseilles	7	13.1	3	14.0
Bilbao	1	9.0	2	8.5
Lisbon	5	18.8	3	8.3
Huelva	11	6.7	2	8.0
Valencia	1	6.0	4	12.0
Barcelona	7	32.7	8	23.2
Genoa	4	9.0	13	15.1
Naples	1	9.0	1	13.0
Palermo	..	....	2	13.0
Trieste	2	4.0	1	14.0
Patras	1	4.0	1	7.0
Piraeus	2	12.0	3	11.3
Syra	..	....	1	2.0
Beirut	..	....	1	4.0
Alexandria	1	6.0	2	6.0
Algiers	2	16.5	1	11.0
Malta	..	....	2	7.5
Fayal	1	25.0	..	....
Total—all ports	192	15.1	188	13.1

Regains Pacific Trade

Due to the entrance of shipping board vessels into the transpacific routes out of north Pacific ports, American tonnage shows a great increase, compared with a year ago. In the first quarter of 1920, American tonnage constituted 53.55 per cent of the total sailings from Puget sound for the Orient as against 6.38 per cent in the same period of 1919. The Japanese tonnage shows a decrease from 88.84 per cent to 38.99 per cent. Detailed records are as follows:

Overseas Clearances

NET TONNAGE CLEARED ALL AMERICAN PORTS

Year ended Dec. 31	Net tons under American flag	Net tons under foreign flags
1914	745,242	24,127,170
1919	8,610,226	17,879,607

FIRST QUARTER 1920

ARRIVALS FROM ORIENT AT PUGET SOUND PORTS

	JANUARY		FEBRUARY		MARCH		TOTAL		Per cent	Per cent
	No.	Net Tonnage	No.	Net Tonnage	No.	Net Tonnage	No.	Net Tonnage	No.	Net Tonnage
Japanese	5	22,780	13	48,077	12	47,733	30	118,590	62.5	63.45
American	6	20,053	1	4,666	8	29,150	15	53,869	31.25	28.82
British	1	1,809	1	6,526	1	6,118	3	14,453	6.25	7.73
	12	44,642	15	59,269	21	83,001	48	186,912	100.00	100.00

SAILINGS FOR ORIENT

Japanese	4	22,000	4	16,786	7	31,202	15	69,988	36.58	38.99
American	9	35,152	5	22,528	10	38,114	24	95,794	58.54	53.55
British	1	7,172	.	.....	1	6,526	2	13,698	4.88	7.46
	14	64,324	9	39,314	18	75,842	41	179,480	100.00	100.00

FIRST QUARTER 1919

ARRIVALS FROM ORIENT AT PUGET SOUND PORTS

Japanese	14	51,267	20	75,856	20	75,712	54	202,835	90.00	94.06
American	..	.....	3	4,396	2	2,738	5	7,134	8.33	3.31
British	..	.....	..	....	1	5,672	1	5,672	1.67	2.63
	14	51,267	23	80,252	23	84,122	60	215,641	100.00	100.00

SAILINGS FOR ORIENT

Japanese	14	55,370	19	63,626	25	94,143	58	213,139	82.85	88.84
American	2	5,010	3	4,729	3	5,594	8	15,333	11.43	6.38
British	2	3,542	..	.....	1	5,672	3	9,214	4.29	3.84
Norwegian	1	2,231	..	.....	..	.....	1	2,231	1.43	.94
	19	66,153	22	68,355	29	105,409	70	239,917	100.00	100.00

April Ore Shipments

Lake navigation started the 1920 season under numerous handicaps which have threatened to hold down the freight movement. Strikes of ore and grain handlers coupled with the acute shortage of fuel, delayed vessel movement even after ice conditions permitted the passage of the Soo. As a result shipments of ore from upper lake ports during April were only 230,854 tons, compared with 1,412,239 tons in April, 1919, a decrease of 1,181,385 tons. April, 1918, shipments were 235,870 tons. Detailed shipments follow:

Port	Gross tons April, '20	April, '19
Escanaba	.....	71,417
Marquette	.....	.....
Ashland	.....	147,358
Superior	205,586	101,730
Duluth	25,268	794,050
Two Harbors	.....	297,684
Total	230,854	1,412,239
1920 decrease	1,181,385	

Ore On Dock May 1

Transportation delays during the winter held down the movement of ore from Lake Erie docks to interior furnaces. As a result, the balance of ore held on dock on May 1 was, with one exception, the highest on record. The docks held at the opening of navigation this year 6,192,101 gross tons compared with 5,681,085 gross tons on May 1, 1919, an increase of 511,016 gross tons. The greatest balance ever carried into the new season was on May 1, 1911, when Lake

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Marine Business Statistics Condensed

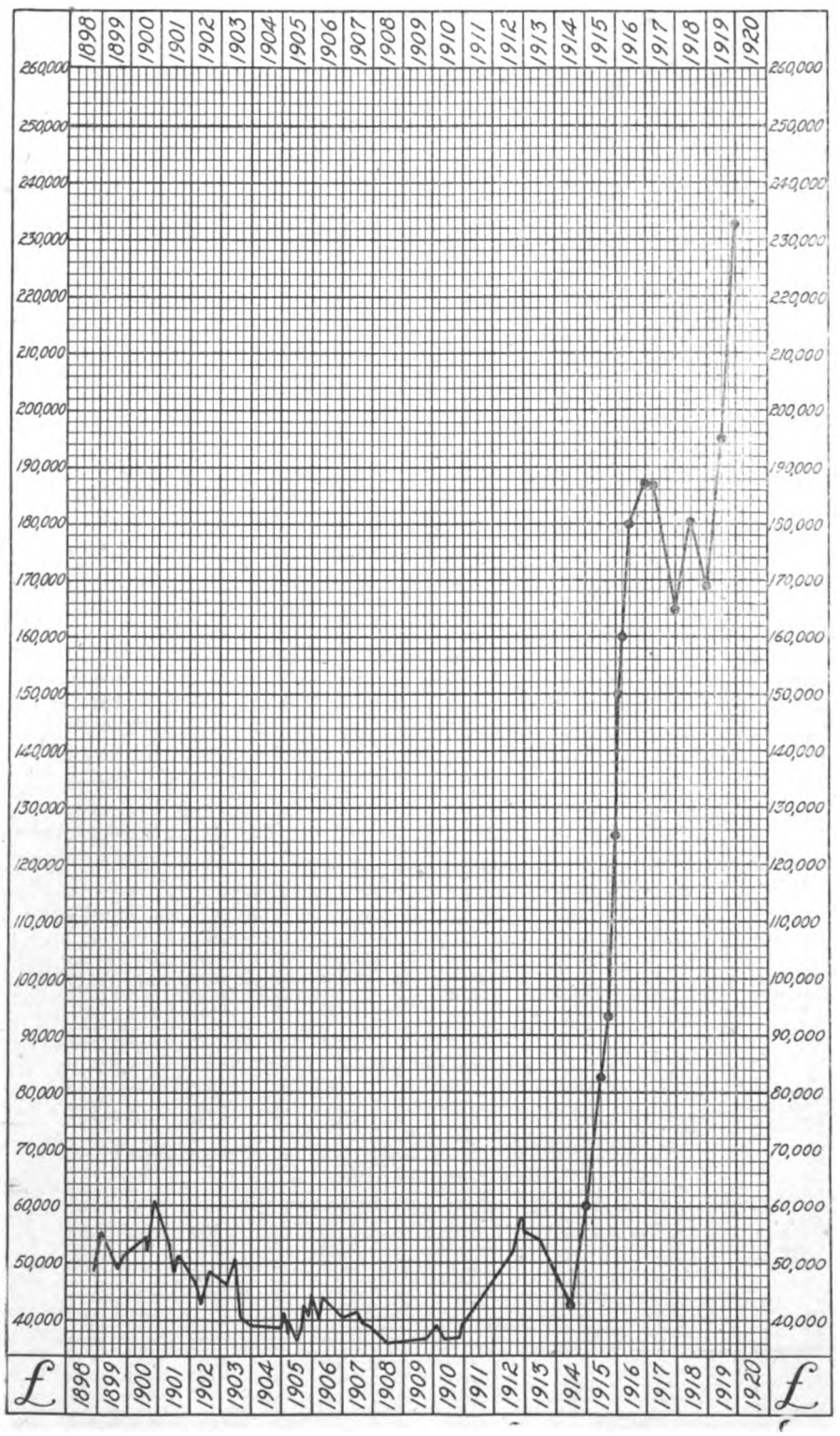
Erie docks held 6,778,494 gross tons. The balance on May 1, 1918, was 5,622,019 gross tons; on May 1, 1917, 4,772,232 gross tons.

Statistics gathered by THE MARINE REVIEW from various dock managers at Lake Erie ports show that the total rail shipments from Lake Erie ports to furnaces during the winter season from Dec. 1, 1919, to May 1, 1920, were 4,264,213 gross tons. Winter shipments during 1918-1919 were 4,774,037 gross tons. Last winter shipments were:

	Tons
On dock Lake Erie ports, Dec. 1, 1919..	10,456,314
On dock May 1, 1920.....	6,192,101
By rail to furnaces, winter of 1919-20..	4,264,213

The amount of ore shipped to furnaces during the 1919 navigation season was 32,648,356 gross tons which, added to the winter shipments, gives a total of 36,912,569 gross tons of ore forwarded to furnaces over these docks in the year ended May 1, 1920. This total compares with 48,123,949 gross tons moved in the corresponding period ended May 1, 1919; 47,963,072 tons in the year ended May 1, 1918, and 50,378,445 tons in the year ended May 1, 1917. Port records are:

Port	Gross tons May 1, 1920	Gross tons Dec. 1, 1919
Buffalo	199,434	355,194
Erie	265,359	405,761
Conneaut	954,783	1,850,759
Ashtabula	1,880,198	3,429,258
Fairport	347,042	528,360
Cleveland	1,412,757	2,078,201
Lorain	407,094	777,803
Huron	568,790	698,927
Toledo	156,644	332,051
Total	6,192,101	10,456,314



AVERAGE SALE PRICE OF TYPICAL BRITISH STEAMER

Soo Canal Report

Freight movement through the Soo canal in April, 1920, shows a considerable decrease over the opening month in 1919. Comparison of tonnage figures for the past seven years follow:

	Net tons
April, 1920	537,209
April, 1919	2,373,163
April, 1918	422,489
April, 1917	258,290
April, 1916	2,215,362
April, 1915	1,434,735
April, 1914	744,520

Figures in detail for 1920 and 1919:

EASTBOUND	To May 1, 1920	To May 1, 1919
Lumber, M ft. B. M.	2,050	2,650
Flour, barrels	.....	.....
Wheat, bushels	4,274,611	16,729,000
Grain, bushels	6,008,000	4,176,041
Copper, net tons	.....	.....
Iron ore, net tons	162,630	1,139,326
Pig iron, net tons	.....	.....
Stone, net tons	.....	1,900
General merchandise, net tons	545	11
Passengers, number	.....	3
WESTBOUND		
Coal, soft, net tons	50,831	415,824
Coal, hard, net tons	10,000	142,864
Iron ore, net tons	.....	.....
Mfgd. iron and steel, net tons	.....	2
Salt, net tons	.....	5,000
Oil, net tons	.....	46,656
Stone, net tons	6,247	.....
General merchandise, net tons	15,405	6,551
Passengers, number	.....	13

SUMMARY	To May 1, 1920	To May 1, 1919
Vessel passages, number	232	716
Registered tonnage, net	613,325	2,090,769
Freight—		
Eastbound, net tons	454,726	1,756,266
Westbound, net tons	82,483	616,897
Total freight, net tons	537,209	2,373,163

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Late Flashes On Marine Disasters

Brief Summaries of Recent Maritime Casualties— A Record of Collisions, Wrecks, Fires and Losses

Name of vessel	Date	Nature	Place	Damage resulting
Alderman	Apr. 17	Grounded	Rehoboth	Not stated
Alice	Apr. 13	Grounded	Birds island	Not stated
Allies	Apr. 15	Minor repairs	Baltimore	Slight
Angelo	Apr. 15	Leaking	At sea	None
Arabistan	Apr. 16	Mchy. damaged	At sea	Not stated
Admiral Mayo	Apr. 23	Broke shaft	At sea	Not stated
Accomac	Apr. 26	Boiler trouble	At sea	Not stated
Arthur V. S. Woodruff	Apr. 26	Grounded	Off Barbados	Total loss
Angielena	Apr. 26	Short supplies	Havana	Slight
Attainment	Apr. 24	Grounded	Tiverton	Not stated
Acadian Queen	Apr. 22	Leaking	Gulf Mexico	Not stated
Aurelia	Apr. 29	Fire	Callao bay	Not stated
Betsy Ross	Apr. 21	Collision	Boston	Sunk
Bay Head	Apr. 15	Lost propeller	At sea	Not stated
Bellimina	Apr. 15	Grounded	Toulon	Not stated
Barr	Apr. 17	Fire	Halifax	Heavy
Bright	Apr. 6	Grounded	Cape Hatteras	Not stated
Bastia	Apr. 11	Explosion	Naples harbor	Total loss
Balino	Apr. 13	Grounded	False Hook	Not stated
Brisk	Apr. 8	Fire	At sea	Total loss
Bombay Maru	Apr. 9	Fire	At sea	Cargo damaged
Benmore	Apr. 22	Lost sails	At sea	Not stated
Boxley	Apr. 9	Grounded	South Pass	None
Braeburn	Apr. 27	Grounded	Off Bermuda	Not stated
B. H. Warford	Apr. 7	Foundered	At sea	Total loss
Blue Eagle	Apr. 27	Piston damaged	St. Michael's	Not stated
Benmohr	Apr. 28	Collision	Penang	Not stated
Chiquimula	Apr. 13	Grounded	Cape Gracios	Jettisoned deckload
Cubadist	Apr. 21	Missing	At sea	Not known
Cowboy	Apr. 8	Pump trouble	At sea	Not stated
Clutha	Apr. 10	Grounded	Santa Cruz	Total loss
Clio	Apr. 16	Grounded	Rouen	Not stated
Clara A. Donnell	Apr. 13	Heavy weather	At sea	Damaged pumps and sails
City of Galveston	Apr. 8	Hurricane	Off Funchal	Lost anchors
Columbine	Apr. 8	Boiler trouble	At sea	Slight
Canadian Voyageur	Apr. 17	Collision	Bay of Fundy	Not stated
Chaudiere	Apr. 16	Collision	Halifax	Mchy. damaged
Cabrille	Apr. 14	Collision	Off Port Arthur	Damaged rudder
Courtney C. Houck	Apr. 26	Rudder	Bermuda	Not stated
Calvin Austin	Apr. 28	Steering gear	At sea	Not stated
Coyote	Apr. 27	Mchy. disabled	At sea	Slight
Colusa	Apr. 28	Collision	Penang	None
Cincinnati	Apr. 26	Rammed slip	Exchange Place	Passengers hurt
Castle Point	May 3	Steering gear	Off Queenstown	Not stated
Defiance	Apr. 8	Fouled	Off Stapelton	Slight
Delwood	Apr. 9	Engine trouble	At sea	Not stated
Diana	Apr. 22	Heavy weather	At sea	Damaged steering gear
David R.	Apr. 24	Capsized	Off Boston	Cargo lost
Daisy Gadsby	Apr. 20	Lost windlass	At sea	Not stated
Doris Hamlin	Apr. 25	Grounded	Off Galveston	Not stated
E. A. Morse	Apr. 18	Boiler trouble	Off Sandy Hook	Slight
Etna	Apr. 14	Damaged rudder	At sea	Slight
Eagle Wing	Apr. 16	Sprung leak	Santa Cruz	Serious
Eastern Belle	Apr. 7	Coal bunkers afire	At sea	Slight
Eleanora de Costa	Apr. 13	Fouled	Boston	Mainboom broken
Esopus	Apr. 21	Cargo afire	Galveston	Slight
Elfay	Apr. 24	Grounded	Off Ocracoke inlet	None
Edith McIntyre	Apr. 26	Heavy wind	Off Boston	Lost foremast
Elsie L. Corkum	Apr. 27	Damaged bulwarks	At sea	Jettisoned cargo
Ethelyn	Apr. 25	Repairs	Lunenburg	Not stated
Echo	Apr. 30	Leaky	Sydney	None
Fordonian	Apr. 19	Disabled	At sea	Engine trouble
Freedom	Apr. 9	Grounded	Chesapeake bay	Slight
Griffin	Apr. 26	Grounded	Horn island	Not stated
G. A. Flagg	Apr. 29	Grounded	Mississippi river	Not stated
Hallfreed	Apr. 18	Explosion	South Brooklyn	Total loss
Herbert & Ruby	Apr. 1	Missing	At sea	Not known
Hotham Newton	Apr. 18	Foundered	At sea	Total loss
Hyannis	Apr. 26	Pumps out of order	At sea	Leaking
H. H. Rogers	Apr. 10	Collision	Chesapeake bay	Not stated
H. D. Throop	Apr. 17	Collision	Bay of Fundy	Total loss
H. B. Lovejoy	Apr. 22	Leaking	Neah Bay	Not stated
Henry Wilson	Apr. 17	Heavy list	At sea	Waterlogged
Huasteca	Apr. 29	Sank	Tampico	Total loss
Inca	Apr. 13	Boiler trouble	At sea	Not stated
Iver Heath	Apr. 8	Fire	At sea	None
Inspector	Apr. 13	Boiler trouble	Queenstown	Not stated
Itan	Apr. 19	Broke propeller	Port Said	Slight
Ipswich	Apr. 25	Disabled	Off Sandy Hook	Boiler trouble
Jacona	Apr. 4	Grounded	Off Bourghas	None
Jason	Apr. 18	Struck dock	Bremen	Bows badly damaged
Jamestown	Apr. 21	Collision	Off Stapleton	Stove hole
Joseph Leopold	Apr. 26	Grounded	Silver Bank	Total loss
Lake Grattan	Apr. 10	Mchy. trouble	Off Gibralter	Not stated
Luella	Apr. 15	Short of fuel	At sea	None
Lake Pachuta	Apr. 9	Disabled	At sea	Engine, pump trouble
Lake Calvenia	Apr. 10	Collision	Chesapeake bay	Sank
Laurel Whalen	Apr. 9	Heavy weather	Tahiti islands	Disabled
Lake Cayuga	Apr. 10	Grounded	Banes harbor	None
Lake Favonia	Apr. 22	Heavy weather	At sea	Rudder chains
Lake Elmdale	Apr. 24	Boiler trouble	Port Arthur, Tex.	Not stated
Lord Byron	Apr. 24	Engine trouble	At sea	Not stated
Lake Benbow	May 2	Fire in hold	Galveston	None
Mystery	Apr. 9	Grounded	Salem	Damaged stern
Mystic	Apr. 9	Disabled	At sea	Boiler trouble
Monmouth	Apr. 14	Cargo afire	Boston	Not stated
Mount Baker	Apr. 13	Mchy. trouble	Barbados	Not stated
Mopang	Apr. 12	Ballast shifted	At sea	Not stated
Meditation	Apr. 13	Leaking badly	At sea	Abandoned
M. F. B.	Apr. 5	Abandoned	At sea	Total loss
M. J. Taylor	Apr. 10	Collision	Mobile bay	Not stated
Margaret G.	Apr. 10	Collision	Mobile bay	Not stated
Mauretania	Apr. 20	Shoot fuel	At sea	None
Minnesota	Apr. 27	Boiler trouble	At sea	Not stated
Mukilteo	Apr. 19	Grounded	Presidio shoal	None
Mary G. Maynard	Apr. 24	Heavy gale	At sea	Lost deckload
Mexoil	Apr. 22	Fire	Gulf Mexico	Slight
Monomac	May 2	Leaky hold	Falmouth	Not stated
Munamar	May 4	Grounded	San Salvador	Not stated
Northland	Apr. 13	Leaky	At sea	Serious
Northumberland	Apr. 13	Fouled	Boston	Not stated
North Pole	Apr. 19	Mchy. disabled	Las Palmas	Not stated
Nouvelle Ecosse	Apr. 17	Heavy weather	At sea	Lost rudder
Norma	Apr. 28	Grounded	Point Lookout	Heavy
New England	Apr. 23	Lost anchors	At sea	None
Nawitka	May 2	Lost propeller	At sea	Not stated
Neptune	Apr. 13	Collision	St. John	Housing to run away
Osprey	Apr. 9	Steering gear	At sea	Rudder disabled
Oconite	Apr. 10	Propeller trouble	At sea	Not stated
Osawatomie	Apr. 14	Heavy gales	At sea	Sprung leak
Ozaukee	Apr. 9	Steering gear	At sea	Not stated
Oyaka	Apr. 6	Engine trouble	At sea	Not stated
Oregon	Apr. 17	Engines disabled	Honolulu	Not stated
Overbrook	Apr. 21	Collision	Off Stapleton	Heavy
Otraum	May 3	Stuck dock	St. John	Damaged plates
Polybius	Apr. 11	Short of fuel	Off Bahamas	None
Petorian	May 4	Disabled	At sea	Broken rudder
Quidnic	Apr. 12	Distress	At sea	Boiler trouble
Roger de Lluria	Apr. 16	Cargo afire	Teneriffe	Cargo damaged
Retriever	Mar. 15	Abandoned	At sea	Waterlogged
Risoer	May 2	Abandoned	At sea	Fire
Rebecca School	May 1	High wind	Delaware bay	Collision
Samuel Castner, Jr.	Apr. 18	Grounded	Swans island	Total loss
Susquehanna	Apr. 19	Grounded	Off Dalmatia	Not stated
Samuel Faunce	Apr. 21	Missing	At sea	Not known
Suruga	Apr. 14	Grounded	Martin Garcia	Not stated
Serbier	Apr. 10	Broke steerer	At sea	Not serious
Sachem	Apr. 8	Fire	Halifax	Slight
Senator Balley	Apr. 14	Collision	Off Port Arthur	Not stated
St. Charles	Apr. 28	Grounded	Off Calbarien	None
Sylvia Victoria	Apr. 26	Sunk	Off Bilboa	Partial loss cargo
San Mateo	May 1	Grounded	Salina Cruz	Sunk
Santiago	Apr. 30	Grounded	Georgetown	None
Somme	Apr. 13	Distress	At sea	Not stated
Tashmoo	Apr. 15	Disabled	At sea	Broke steering gear
Tuckanuck	Apr. 13	Disabled	At sea	Turbine trouble
Tuck-Oronite	Apr. 16	Propeller trouble	At sea	Not stated
Thorwald Halvorsen	Apr. 18	Fire	So. Brooklyn	Slight
Turret Crown	May 3	Struck iceberg	Off Cape Race	Hole in bow
Thelma	May 1	High wind	Delaware bay	Collision
Uraisan Maru	Apr. 29	Fire	At sea	Cargo damaged
Vallavia	May 4	Disabled	At sea	Shaft gone
Westboro	Apr. 4	Lost blade	At sea	Slight
Wilcox	Apr. 20	Cargo afire	Savona	Not stated
William O'Brien	Apr. 18	Missing	At sea	Not known
West Selene	Apr. 8	Disabled	At sea	Lost blades
Wayhut	Apr. 21	Sinking	At sea	Not known
Wisla	Apr. 11	Leaking	At sea	Not stated
West Quechee	Apr. 12	Leaking	Fayal	Not stated
Westford	Apr. 19	Engine trouble	At sea	Not stated
Westgate	Apr. 18	Heavy seas	At sea	Abandoned
Wampum	Apr. 22 / May 3	Struck ice / Lost propeller	Sydney, C. B. / Boston bay	Damaged bows / Not stated
Walter D. Noyes	Apr. 27	Collision	Lynnhaven roads	Damaged plates
Wahkeena	Apr. 19	Grounded	Presidio shoal	Slight
Wilmington	Apr. 21	Disabled	At sea	Broke steering gear
Wekika	Apr. 15	Short supplies	At sea	None
West Cape	Apr. 27	Fire in hold	At sea	Not stated
West Harlan	Apr. 30	Cargo afire	Genoa	Sunk
West Galoc	May 4	Disabled	Off Landsend	Lost blades
Zuiderdyk	Apr. 13	Engine trouble	At sea	Not serious

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Coal Costs Hit British Ships

Prices for Bunkers Cripple Shipping — Lower Quotations Now Fixed — Analysis of First Quarter's Operations

BY CUTHBERT MAUGHAN
Shipping Editor, The Times, London

A CLEAR indication of the shipping conditions prevailing at the beginning of the year was given by the British shipping controller in an announcement of revised rates of freight for government cargoes. When, after the conclusion of the armistice, ships were released by the government from requisition, the policy of the British ministry of shipping was to direct vessels to load certain cargoes at fixed rates of freight. The ministry only applied this policy to commodities the distribution of which the government could entirely control. Foremost among such commodities was wheat. Another was sugar. As regards the north Atlantic, the government retained some 50 per cent of the space in the liners, and paid the shipping companies rates which were equivalent to about half the ordinary market rates. This latter arrangement came to an end in March, the government considering that as the market rates had fallen it could do better by buying space in the open market.

Early in January, the ministry of shipping announced that, in view of the great increase in the price of bunker coals, delays to vessels in port, and the higher cost of loading and discharging, it had decided to pay higher rates of freight for certain voyages. As compared with the rate of 62s 6d per ton for wheat from the River Plate, a rate of 107s 6d was to be paid, with an additional 5s per ton for loading at the up-river ports. The rate for wheat from Australia to the United Kingdom was to be 150s a ton, as compared with 105s previously paid. The rate for sugar was to be 85s a ton, as compared with 50s a ton.

Call for Liner Space

These government rates were not intended to leave the shipping companies with a large profit, and the fact that they were ceded by a government department should be sufficient proof that the shipowner's claim to higher rates was justified. The new rates were granted in deference to representations that the previous rates were not covering expenses. The granting of the higher rates synchronized with a request by the shipping controller that the liner companies should allocate a substantial proportion of the space in their ships for the carriage of these bulk cargoes. Thus, liner companies which normally traded in the north Atlantic allocated, in reply to the request of the shipping controller, tonnage to load in South America, and, since the liners usually engaged in the Australian trade could not supply sufficient tonnage to bring all cargo available in Australia, the lines serving India and the Far East directed a substantial amount of tonnage to load in Australian ports. The arrangements which were made in January proved insufficient, and the shipping controller again approached the shipping companies in March with a view to their supplying more tonnage, and this request was, of course, met.

Bunker Prices Soar

The high cost of coal and the congestion at ports throughout the world have been outstanding features of the experience of shipping managers during the past quarter. Some leading managers have been disposed to describe the high cost of coal as the chief factor. Certainly the price has been extraordinarily high. Before the war, shipping companies could secure bunker coals in British ports at from 18s to £1 a ton. During the war, the price rose very substantially. In the spring of 1919, a price of about 56s a ton was ruling. Then it gradually mounted and in March of this year the rate ruling in South Wales ports for large coals was 120s a ton, while in London, to which coal had to be brought by coasting steamer, the rate touched 155s a ton. While the price of coal had been mounting, shipowners had raised their voice in protest and some questions were asked in parliament, but the grievance of the shipping lines was not pressed home. Then in March, the matter was brought to a head by announcements that in order to counteract the extraordinarily heavy costs freight rates would have to be increased.

The rise in the price of coal was traceable largely to the fact that the government did its best to see that industrial works and private consumers in the United Kingdom were insured of supplies, and the price to home consumers was strictly limited. Consequently while factories were being supplied with coal at 40s a ton, understood to involve an actual loss of 5s a ton shipping companies were being charged in the port of London 150s and more. No limit was placed on the price of coal for consumption abroad or for ship's bunkers. The heavy home consumption, falling on a decreased output, meant that there was great competition for such coal as was left for export or for bunkers. Consequently, prices rose to a fabulous level. Shipping companies, in order to get their vessels moving, felt obliged to pay whatever prices were asked. Great difficulty was experienced in securing any supplies at all and large numbers of vessels have been detained waiting for coal at the chief ports or at the coaling centers. At one time in March, many hundreds of vessels were waiting to load in South Wales.

In March, the coal controller realized that something must be done. The collieries were approached and they voluntarily agreed to limit the price of bunker coals for all vessels, irrespective of nationality. As compared with a price of 120s a ton for large coal in South Wales, the collieries agreed that a new price of 80s a ton should be quoted as from March 24. The price of large wrought-through coal was to be 75s a ton. It is probable that previously little difference had existed in the price of these and of the best large coal. For small coal a price of 60s a ton was to be quoted, as compared with 80s a ton. Similar reductions were to apply to the northeast coast and the prices in such ports as London, Liverpool, and Southampton were to be reduced in corresponding proportion. The price of 80s a ton is still much higher than that quoted a year ago. The new prices are to be maintained until the end of August. By that time the strict control by the government of the coal industry will probably have been much relaxed.

Freight Rates Up

The sharp rise in the price of coal during the spring brought the question of higher freights to a head. In March, the Booth line announced that a surcharge of 33 1-3 per cent would be increased to 75 per cent, the company pointing out that it was then paying more than 150s a ton for coal in Liverpool. Then the announcement of the reduction in the price of bunker coals was made, and the management

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issued a modified statement to the effect that, in view of the changed conditions, the surcharge would be increased only to 50 per cent.

Shortly afterward, the British shipping lines trading to the Far East decided that freights from the Far East should be increased by 25 per cent. They claimed that no freights were lower than theirs and certainly some of the far eastern freights compare very favorably with the corresponding rates from the United Kingdom to the Mediterranean ports. This increase was to take effect as from April 1. The support of the Japanese shipping companies, which participate in the far eastern conference was, however, not obtained in time for the decision of the British lines to take effect on that date. The Japanese shipping companies are understood to receive financial support from the Japanese government, and, in connection with this support, the Japanese board of trade has a voice in freight questions. The Japanese government has consistently adopted the attitude that low freights on raw material are in the interest of the nation and that is one reason why freights to Japan have been kept on a comparatively low basis.

At the beginning of April shipping managers in the north Atlantic trade decided that westward freights must be increased. They announced increases ranging from 25 per cent on the lower rated goods to 50 per cent on the higher priced articles. They had long had this question of higher rates under consideration but had been reluctant to take any step which might be considered prejudicial to the interests of the export trade. The ships leaving the United Kingdom had for some months past been sailing with larger cargoes, although more space has always been available in ships leaving the United Kingdom for North America than there was cargo to fill it. Managers lately have been quite pleased when they found that ships of a carrying capacity of some 10,000 tons were carrying, say between 2000 and 3000 tons. They expressed the belief that the increase in rates will not unfavorably affect the trade. The alternative, they declare, to an increase in rates was to lay up the ships. Apart from the cost of coal, all expenses have been rising, wages probably being now fully three times what they were in the years preceding the war.

Early this year, the lines in the Australian trade decided that an increase in the passenger rates was necessary. The companies recognize that the passage rates are high, as compared with the prewar level, and they may well regret the increase in rates, especially those of the third class passengers. These are now on such a level as to constitute a serious hindrance to travel, and the companies realize that they are running a serious risk of killing trade. Still, they regard themselves as helpless in the matter.

The north Atlantic companies as from the beginning of April have increased the passage rates by 10 per cent. At the same time they have reduced the surcharge from 33 1-3 per cent to 25 per cent, the reason given being the improvement in the rate of exchange. Hopes are held out that as the rate of exchange gradually improves, this surcharge may be reduced until, when the exchange becomes normal, it can be entirely eliminated. The 10 per cent increase is, apparently, to be a permanent addition to the passage rate.

The great decline in the quantity of coal available for export has been a serious blow to the cargo steamship companies. In the years before the war they relied upon coal as the main export, and the freight earned on the outward voyage contributed to the earnings of the round voyage. Now when vessels constantly leave the United Kingdom in ballast, the homeward freight has to bear the cost of the complete round voyage. Coaling ports in the East which were previously fed from the United Kingdom have been relying to an increasing extent on coals from India and South Africa. The high price of coal has particularly affected the liner companies which consume large quantities. The passenger liner companies have also been especially hit by the rise in wages, since they carry large complements, including seamen, firemen, and stewards.

All classes of shipping have suffered heavily from delays in ports, involving a loss of efficiency which has been estimated independently by different authorities at about 40 per cent. Some managers have even given first place to these delays among the factors affecting shipping at the present time. The grave congestion at all the ports was, of course, an aftermath of the war. The waste of tonnage has been appalling. At times, a dozen ships laden with tea have been waiting in the Thames for lack of bonded warehouse accommodation for the reception of their cargoes. Similarly the ports have been thronged with ships laden with meat, owing to the lack of adequate refrigerated space ashore. The congestion of tea and meat ships may be traced directly to war circumstances, and it must be some time yet before the ports can be cleared. Some improvement is now being made. Briefly, the passenger liner companies are already encountering serious difficulties. Comparatively few great passenger ships are now being built, owing to the enormous cost. The cargo steamship companies, with their lower bills for wages and stores, may be able to show satisfactory results for some time yet, but the general opinion among shipping companies is that sooner or later freights in the open market will fall as more tonnage comes into the water. The time charter rates in the open market have lately been rather easy and seem likely to go lower yet. The liner freights are being raised solely because of the enormous rise in expenses. Market values of many shipping securities have fallen lately.

Some experienced owners have sold their ships while new companies have been formed to which the public has readily subscribed capital.

British Shipping Index

PRICES OF REPRESENTATIVE SHIPPING SECURITIES IN FIRST QUARTER

	Highest £ s. d.	Lowest £ s. d.	Date
Cunard shares ..	3.17.6		Jan. 19
(Cum-bonus of new shares) par £1.....		3. 5.0	Feb. 12
Cunard shares .. (Ex-bonus) par £1.....	2.12.0		Jan. 19
		2. 0.0	March 3
Furness, Withy shares, par £1	3. 6.3		Jan. 28
		2. 9.4½	March 27
P. & O. deferred £100 stock...	663. 0.0		Jan. 23
		545. 0.0	March 25
Royal Mail S. P. Co. £100 stock	228. 0.0		Feb. 10
		184.10.0	Jan. 2

SHIP CONSTRUCTION FIGURES FOR UNITED KINGDOM IN FIRST QUARTER OF 1920

	No.	Gross tons
Tonnage launched	131	454,294
Tonnage commenced	229	708,031
Tonnage building, March 31...	865	3,394,425

SHIPPING MANAGEMENT FACTS
1ST QUARTER 1920

	Highest £ s. d.	Lowest £ s. d.
Time Charter Rate: Ordinary British cargo steamers per ton D.W. per month.....	1.10.0	1. 4.0
Voyage Rates		
Plate—U. K. grain, per ton*.....	5. 7.6	3. 2.6
Australia—U. K. grain, per ton*.....	7.10.0	5. 5.0
Cuba—U. K. sugar, per ton*.....	4. 5.0	2.10.0
Fuel		
Coals: Best Welsh large at S. Wales, per ton.....	6. 0.0	4. 0.0
Oil: Per ton at Port Said.....	15. 0.0	12.10.0
Wages: A. B. seamen per month†.....	11.10.0	
Boatswains per month†.....	15. 0.0	
Firemen per month†.....	12.10.0	

*These rates are government rates for directed voyages.
†These rates are fixed by the national maritime board on which the ministry of shipping, owners and seafarers are represented.

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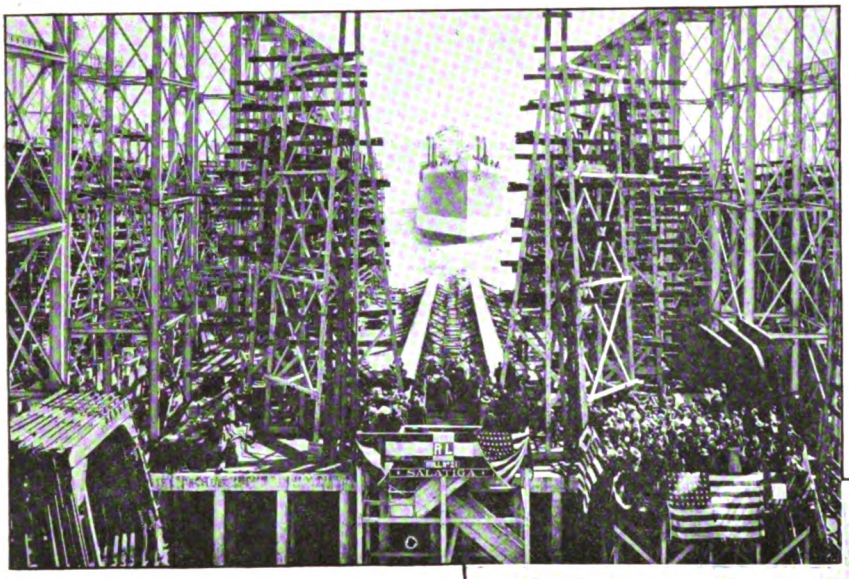
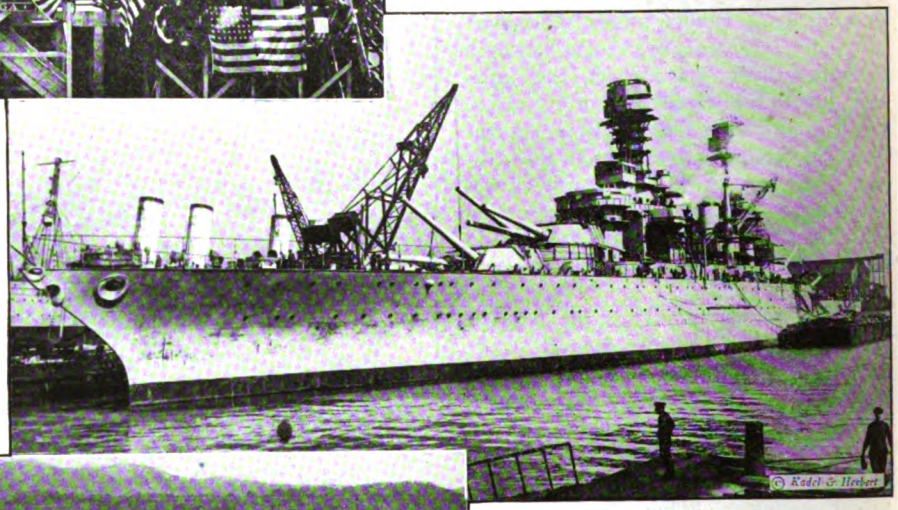
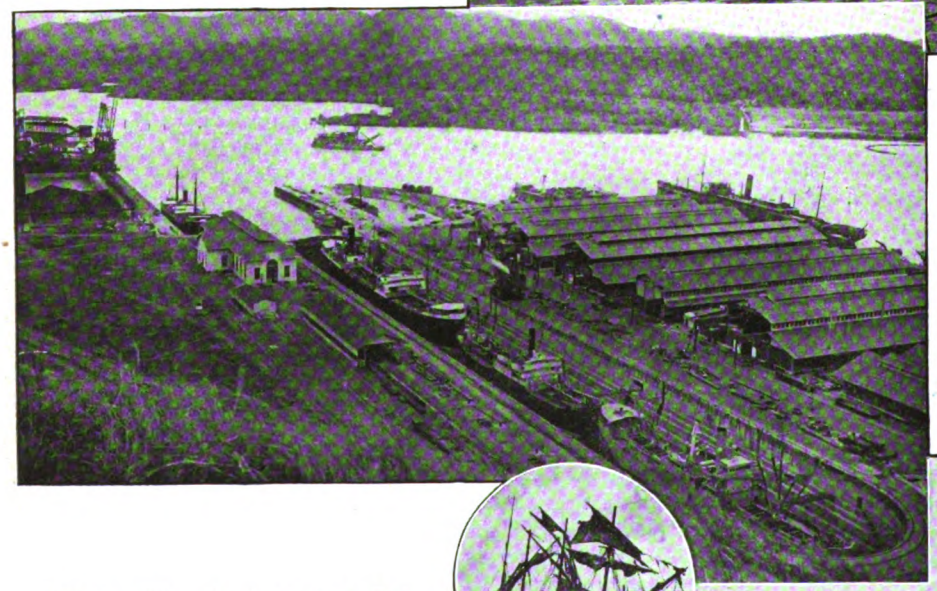
Latest Marine News in Pictures



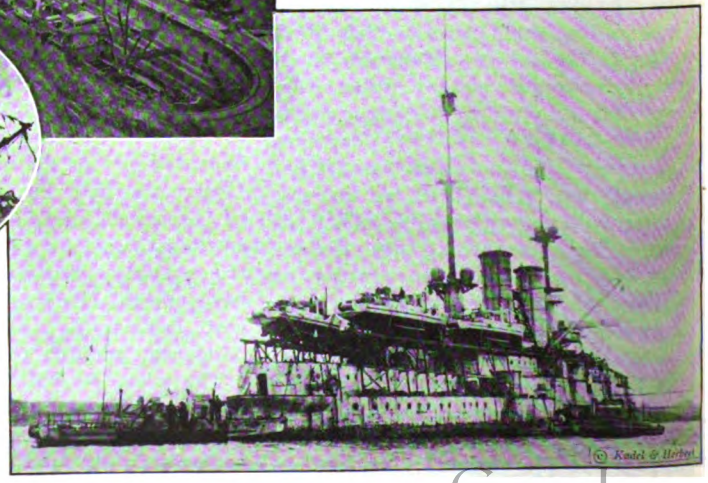
Launching the steamer Salatiga at the yards of the Sun Shipbuilding Co., Chester, Pa. This is one of the recent additions to America's fleet of tankers which is increasing rapidly in numbers, as most of the new ships turned out in the past few months have been of this type



Uncle Sam's latest 32,000-ton dreadnaught, Tennessee, as she looks today, 95 per cent complete. The commissioning of the Tennessee has been delayed temporarily, due to the fact that her twelve-gun, 14-inch main battery is not in shape to be turned over to her crew.



The latest development in war craft is that of a mother ship for mine layers in the form of a combination battleship and mine layer. The craft shown carries 12 small mine layers on specially constructed steel beds. It also is equipped with huge cranes capable of lifting the layers bodily out of the water



Three ships drydocked at Balboa, the Pacific terminus of the Panama canal, their total length being 968 feet. The drydock is 1000 feet long and 110 feet wide at bottom. On the far side of the dock is the 50-ton steam crane which travels around the coping of the dock. The photograph shows about one-third of the shops which employ over 2000 men. Inset shows the British bark, Peter Iredale, recently wrecked off the coast of Oregon.

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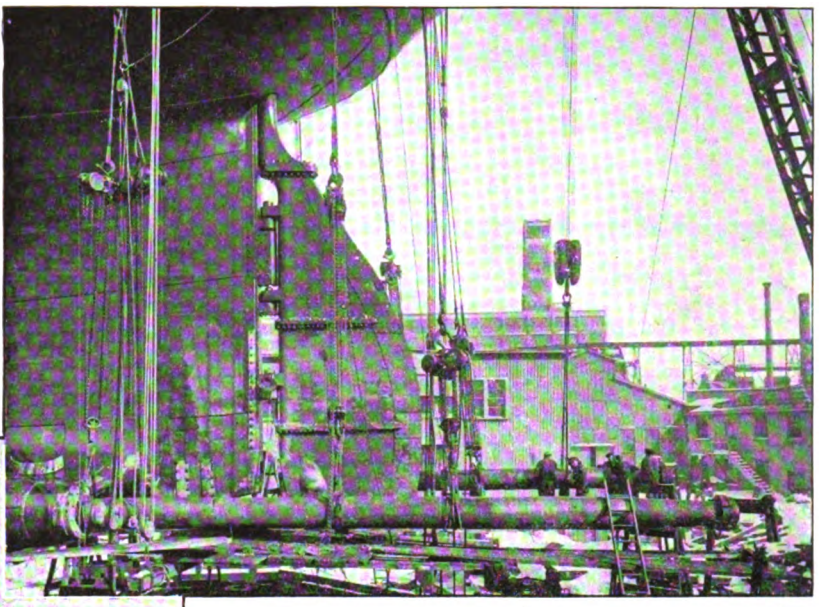
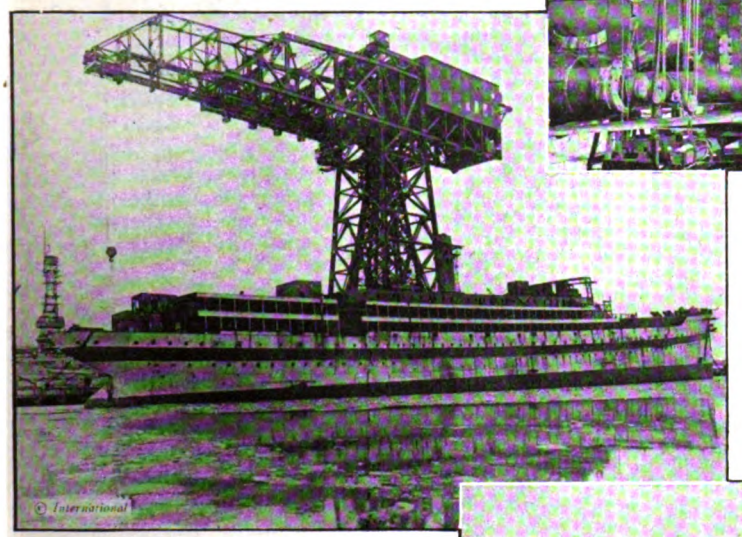
Photographs From Far and Near

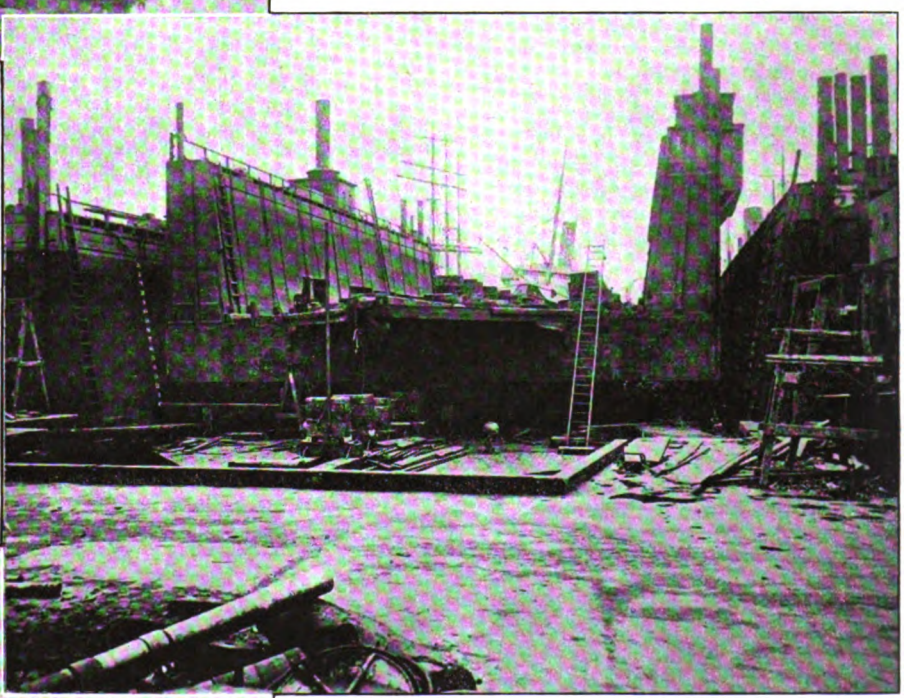
Drawing the shaft on a large vessel in drydock at the Brooklyn yard of the Morse Dry Dock & Repair Co. Repairs on the huge forging were made by welding. Removal and replacement of the shaft is an operation calling for a high degree of skill

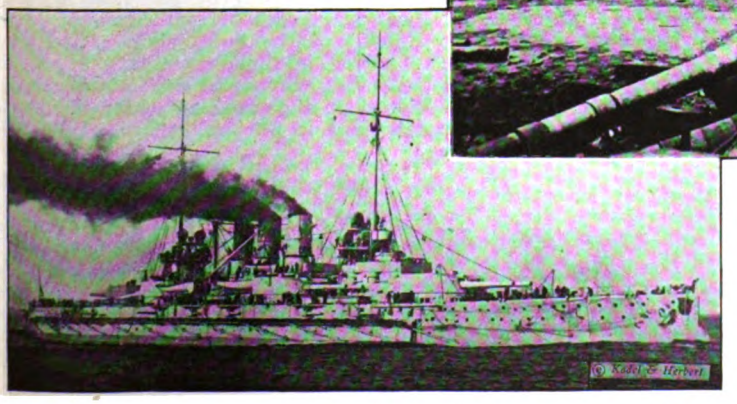




This new hospital ship for the United States navy is rapidly nearing completion at the Philadelphia navy yard. The Relief, which is the first of her type to be built for the American government, was launched a short time ago

The German warship Ostfriesland, allotted to the United States under the terms of the peace treaty, has arrived at the Firth of Forth, England, and will be brought across the Atlantic by an American crew. The Ostfriesland is 546 feet over all, with a beam of 93 feet. Her normal displacement is 22,800 tons, and she has a complement of 1100 men





Floating drydocks, like ships, need drydocking occasionally for inspection. The photograph shows one of the smaller docks in the Tietjen and Lang drydock in Hoboken, N. J. The Todd Shipyards Corp., owns 19 floating docks as well as two graving docks

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Late Decisions in Maritime Law

Legal Tips For Ship Owners and Officers

Specially Compiled for The Marine Review

By Harry Bowne Skillman

Attorney at Law

A CONTRACT by the managing agents of a named steamer line for freight room under deck cargo, for shipment on a named vessel, "or by a steamer or steamers to be named later," entitled the shipper to shipment on a steamer of the named line. In deciding the issue in the case of Moore & McCormack Co., Inc., vs. Hesslein, 255 *Federal Reporter* 46, the court said: "We have no doubt that the contract is to be construed as one for shipment on a steamer of the line. If it had been made with either the American, French, Cunard, White Star, or any other regular, well known line of steamers, no one would have pretended that such company would fulfill it by engaging freight room on a general ship not owned or operated by it." It was then further said, "But if it were to be held that such a vessel could be substituted, we think that the particular steamer SARGENTO ALBUQUERQUE should not be considered a proper tender. She was a transport of the Brazilian navy, commanded by a lieutenant of that navy. The shipment, if made, would have been in the possession of the Brazilian government, and if it had been damaged or lost the respondents could not have proceeded against the Brazilian government, it being a sovereign, *in personam*, nor against the steamer, *in rem*."

* * *

Mere failure of navigators to observe the weather bureau's storm warnings or to obey them, while not conclusive proof of negligence, is evidence of a failure in that ordinary care and skill which is a master mariner's duty.—Nicholson vs. Erie Railroad Co., 255 *Federal Reporter* 54.

* * *

The lease of a pier includes its appurtenances, and this includes the right to tie vessels thereto; "otherwise, there would be no occasion for the pier extending into the water," it was held in the case of Peirce vs. New York Dock Co., 255 *Federal Reporter* 165. It was then decided that the tenant of a pier under a lease prohibiting the landing or storing thereon of high explosives must take care that vessels moored to it are subject to the same restrictions, and where the tenant permitted a vessel having on board mines or torpedoes to lie at the pier for a number of days, the lessor was justified in retaking possession in accordance with the lease.

* * *

In 1916, certain Arabian sailors signed articles with an English vessel, the master of which, just before sailing for New York, dropped the shipping articles and some other papers into the sea. On arrival in New York, the British consul there instructed him as a precautionary measure to draw up a substitute copy of the original articles and have the crew sign on again before him. The day before the vessel sailed, the master took the crew to the consul's office, where all signed on again except the Arabian sailors mentioned, who refused to do so unless paid their wages in full to date. The relation of master and seamen continued notwithstanding the loss of the original articles, and the master refused this demand and ordered the sailors to return to the steamer. The sailors refused to return but filed libel to recover their wages. It was held in the case of NIGRETIA, reported in 255 *Federal Reporter* 56, that the master was justified in treating the sailors as deserters who had forfeited their wages and effects under the English law, and they could not recover because their subsequent demand for half-wages under section 4530, revised statutes, was also refused.

* * *

An ordinary seaman, it was held in SANTA BARBARA, 255 *Federal Reporter* 231, should not have been required to climb a wire guy rope hand over hand, and to hold fast thereto, while working a rope through a block, as this placed him in a dangerous position, with great likelihood that he would fall, and serious injury would follow; such work should have been delegated to only able seamen. It was decided in the same case that where the injured seaman was given the best medical attention available, and the advice of physicians was followed, he was not warranted in leaving the hospital without some good reason and having treatment at home, it not appearing that the ship failed to pay his wages.

* * *

Where one authorized another to arrange for dockage so that cargo might be loaded, wharfage to be at regular rates, if it were intended that the agent should fix the charge for wharfage on the lower basis provided for by statute, such intention should have been indicated either by reference thereto or by using the expression "rate provided by law," or its equivalent; a vessel having accepted the benefit of the arrangement made by such agent, the principal may not receive the benefit of the agreement and at the same time repudiate the obligations by it raised.—ALLAN WILDE, 255 *Federal Reporter* 171.

* * *

Where a surveyor, at the request of a purchaser, examined a vessel offered for sale, and pronounced her seaworthy, and ample opportunity was afforded either for further examination or some insistence upon a warranty, the rule of caveat emptor applied to the sale; there was no warranty by implication. A statement by the seller of the vessel, after the contract of sale had been made and part of the purchase price paid, that the vessel was sound and seaworthy in every way did not constitute an expressed warranty.—W. & S. Job & Co., Inc., vs. Heidritter Lumber Co., 255 *Federal Reporter* 311.

* * *

While the general rule respecting the duty and liability of one undertaking towage services for another is that he is bound to exercise reasonable skill and care, such as a prudent navigator would exercise in similar service until it is accomplished, and he is responsible for any damage which may result to the tow as a result of the failure to perform the responsibilities of such an undertaking, he is not an insurer, and required to use the highest possible degree of skill or care. The burden is on the one who asserts negligence to prove it, it was held in the case of Aldrich vs. Pennsylvania Railroad Co., 255 *Federal Reporter* 330, and the mere fact that a barge has been damaged while in tow does not raise the presumption that the tug has been in fault.

* * *

In the case of TORDENSKJOLD, reported in 255 *Federal Reporter* 672, it appeared that a tug valued at $85,000 released a steamship worth, with cargo, $1,000,000, stranded off the Florida coast, the service, which was rendered in fair weather and with little danger, requiring about two days. The court, in holding an award of a lower court excessive and cutting it down to $10,000, said: "The amount of the award made indicates that undue weight was attached to the value of the property saved, and that there was a lack of due consideration of the absence of such attending circumstances as would justify the liberality evidenced by the decree. In view of the value of what was saved and of that employed in the rescue, of the time, labor, and expense involved in the service, and of all the attending circumstances, our conclusion is that the amount that should be awarded is $10,000, instead of $40,000."

* * *

Maritime liens are favored by the courts, and will be enforced unless clearly displaced by the acts or agreements of the parties. Such a lien of a ship on her cargo is not lost by delivery to a public warehouseman, not an agent of the consignee, without intention to deliver to the consignee.—Howard vs. 9889 bags of malt, 255 *Federal Reporter* 917.

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Ship Orders Stir Pacific Yards

Contracts for Privately Owned Vessels Come to Builders as Federal Work Ends—Rodgers Buys Seattle Plant

BY R. C. HILL

PREDICTIONS in these columns that Puget sound steel shipyards would be in active operation by the middle of 1920 have been verified by the developments of the last month. Contracts for steel tankers have been awarded the Skinner & Eddy Shipbuilding Corp. and to David Rodgers, while private contracts are already under way at the Duthie yards, Seattle, and the Todd plant, Tacoma, Wash. Other work is in prospect and definite announcements are expected in the immediate future.

Mr. Rodgers, who acquired fame with Skinner & Eddy, purchased that firm's yard No. 2 from the Emergency Fleet corporation for $3,400,000 and is now placing the plant in condition for an extensive building program. This plant was formerly the Moran yard, later the Seattle Construction & Dry Dock Co., and in 1916 was purchased by William H. Todd. Two years ago the government purchased it and Skinner & Eddy took it under a lease. The new owner is the David Rodgers Shipbuilding Co. While Mr. Rodgers has not yet stated what work he has, it is understood he has contracts from British interests for a fleet of ten 10,000-ton tank steamships. One report is that the American Fuel Oil & Transportation Co. has awarded the contract.

Skinner & Eddy have taken a contract to build a 13,500-ton steel oil tanker for Norwegian interests headed by Knute Knutsen, Christiania. This will be the largest ship constructed at a Seattle yard and the ways at the plant are being altered in preparation. This tanker is to be 480 feet in length and will have a capacity for 100,000 barrels. Other contracts are expected in the near future. The keel for this tanker is to be laid in May.

On April 20, J. F. Duthie & Co. launched the 8800-ton steel carrier WEST MAHWAH, completing that yard's government contracts. This company has built 24 carriers for the Emergency fleet or a total of 211,200 deadweight tons since September, 1917. At the present time, this yard is constructing two 2650-ton steel carriers for James Griffiths & Sons but other work is expected soon.

On May 1, the Todd Dry Dock & Construction Co., Tacoma, launched its twenty-second hull for the government when the 7500-ton steamer PALLAS was released from the ways. This plant has been exceptionally successful and the last contracts are being rapidly completed. Work for the Emergency fleet will be finished with the delivery of the PALLAS, but contracts for the navy will keep this yard occupied for many months. In addition, two vessels of the 7500-ton type are being laid down on builders' account.

Newman Erb, New York, who recently acquired control of the Prince Rupert Dry Dock & Engineering Co., of Prince Rupert, B. C., announces that he is negotiating contracts to build 20 tankers at that plant.

The G. M. Standifer Shipbuilding Corp., Vancouver, Wash., is making rapid progress in constructing five 9600-ton steel steamers for the Green Star line. These hulls are all expected to be in the water not later than June 1. The ARCTURUS, AQUARIUS and ARGUS have been launched and the ANTINOUS and APUS will follow in the next few weeks.

Two steel vessels for the Swedish-American Mexican Steamship line have been launched at the Coughlin yards, Vancouver, B. C., and it is understood that additional contracts for the same interests have been awarded. J. A. Sturrock, representing the owners, states that tonnage can be constructed at lower prices on the Pacific than in England.

Contracts for seven 12,000-ton tankers for the Swiftsure Oil Transport Co. have been awarded the Northwest Steel Co., at Portland, Oreg., as announced by J. R. Bowles, president of the Northwest company. Mr. Bowles states that his yard will be strictly open shop. The Macy scale and a 44-hour week will be observed. No foreigner will be employed unless he can show his first papers.

Dismantling of the steel shipbuilding plant of the Columbia River Shipbuilding Co., Portland, is well under way and no further contracts are being sought. The property and equipment will be sold. This yard built thirty-two 8800-ton steel carriers for the government during the war emergency.

Contract for a steam, wooden lumber carrier for the Hard-Wood Lumber Co. has been taken by the Matthews Shipbuilding Co., Hoquiam, Wash., but the vessel, which is to be named QUINAULT, will be constructed at the Columbia river plant of the Peninsula Shipbuilding Co.

With the delivery of the wooden steamships BOYNTON, CARONE and CARTONA to the government this month, the wooden shipbuilding program in the north Pacific district was completed. The last three vessels were built on the Columbia river.

The Winslow Marine Railway & Shipbuilding Co., Seattle, has purchased a wooden Ferris type hull, built by Nelson & Kelez, Seattle. The hull has been completed as a barge.

In the Washington and Oregon district, 11 wooden vessels are being completed as steamers and nine hulls as sailing ships. A majority of these were hulls originally built under government contract.

Contracts at Fore River

The Fore River plant at Quincy, Mass., with an assignment of a large portion of the $229,000,000 worth of orders for shipping construction which the Bethlehem Shipbuilding Corp. has on hand, is starting its new building program with a view to breaking all previous records for speed and efficiency at the plant. A partial list of the new contracts follows:

Hull No.	Name	TYPE
1385	China Arrow	Tanker
1386	Japan Arrow	Tanker
1387	India Arrow	anker
1388	Java Arrow	anker
1395		anker
1396		anker
1397		anker
1382		Scout Cruiser
1383		Scout Cruiser
1389 S. 42		Submarine
1390 S. 43		Submarine
1391 S. 44		Submarine
1392 S. 45		Submarine
1393 S. 46		Submarine
1394 S. 47		Submarine
1300	Lexington	Battle Cruiser
1400	Massachusetts	Battleship

Contracts for	Length overall, feet	Dead-weight tons
Standard Transportation Co.	485	12,620
Standard Transportation Co.	485	12,620
Standard Transportation Co.	485	12,620
Standard Transportation Co.	485	12,620
Atlantic Gulf & West Indies Co.	485	12,620
Sinclair Navigation Co.	485	10,600
Sinclair Navigation Co.	485	10,600
United States Navy	...	.....
United States Navy	...	.....
United States Navy	...	.....
United States Navy	...	.....
United States Navy	...	.....
United States Navy	...	.....
United States Navy	...	.....
United States Navy	...	.....
United States Navy	...	.....
United States Navy	...	.....

In addition to these are 12 S-type submarines now on the ways in process of construction.

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Launches First Vessel for Europeans

The Sun Shipbuilding Co., Chester, Pa., in April launched the SALATIGA, a combination cargo and passenger carrier, of 11,000 deadweight tonnage. The dimensions are; length 435 feet, breadth 57 feet 6 inches, depth 38 feet. She is a single screw vessel, equipped with triple expansion 3000 horsepower engines, Scotch boilers and with an estimated speed of 11 knots per hour. She will burn fuel oil exclusively, her estimated consumption of oil being about 30 tons per day.

This vessel was built for Stoomvaart-Maatschappy "Rotterdam Lloyd," and will be used principally between Holland and the Far East as a cargo boat flying the flag of Holland. She was sponsored by Lady Jane Sparks, wife of Sir T. Ashley Sparks, the American manager-director of the Cunard Steamship Co. John G. Pew, president of the Sun Shipbuilding Co., presided at a luncheon immediately following. The SALATIGA is the twenty-first hull to go off the ways of the Sun company and is the first boat ever ordered in America by Holland interests. She marks the completion of the first contract from a European company for a vessel in America since the armistice.

The Sun company has contracted for the erection of 20 oil tankers, these being built for eight different oil companies of which seven are American and one European.

Late News from Foreign Shores

By the Paris Representative of The Marine Review

SAIL or steam ships flying the American flag were until recently unknown in European waters. In days still longer past the Mediterranean was peopled with a fleet of American ships when those of Britain were scarcely more numerous. America has by no means caught up but 15 ships under the American flag were observed recently at one time in the port of Genoa.

The Paris office of the United States shipping board during three months covering the last of 1919 and the first of 1920 reported 221 clearances of American ships from the European ports of its district. In all they discharged nearly 750,000 tons of cargo. These ships were entered as follows:

Port	No. of ships	Port	No. of ships
Barcelona	18	La Mailleraye	1
Blaye-Bordeaux	33	La Rochelle	18
Brest	7	Lisbon	5
Calais	3	Marseilles	26
Cette	4	Nantes	4
Cherbourg	3	Pauillac	3
Dieppe	2	Rouen	6
Dunkerque	10	St. Nazaire	16
Havre	43	Toulon	1
Huelva	11	Valencia	7

* * *

Antwerp is Busy

Belgian shipping activities show the same indomitable spirit of progress which has been manifested by all things Belgian since the armistice. On March 15, 1920, the port of Antwerp held 160 ships, the highest figure attained to date. In addition, 1800 lighters were in service.

The Hoboken yards of Cockerill on the Scheldt above Antwerp have launched the steamer GABRIELLE for the Handel en Scheepvart of Ostende and have already on the stocks two mail liners for the Congo company. These are each 8000 tons, 400 feet long, fitted for carrying 300 passengers and a crew of 200.

A new steamer has been added to the Antwerp-Harwich services to handle the largely increasing traffic between the Belgian and English ports. The BRUGES takes the place of the unfortunate BERLIN sunk by the Germans during the war. She has a speed of 21 knots and passenger accommodation for the night's run for 360 passengers.

Lake-Built, Shipping Board Steamer loading cork board in a Spanish Mediterranean port.

* * *

Waste Ship Space

Criticism is active in France over the economic waste in handling French shipping. Regular cargo liners are clearing from northern French ports for Bordeaux in ballast or carrying a few tons of cargo—a condition unwarranted in these days of difficult transport in the interior of France. Another complaint of the Bordeaux maritime world is of an 8000-ton steamer with a part cargo of railway material for Senegal which loaded in a northern French port but transshipped the entire cargo in the port of Bordeaux instead of continuing her voyage. This is the other side of the medal. Neither of them is especially appealing when the whole world is trying to make the minor effort produce major results.

The Bordeaux drydock has been awaiting the arrival of the following steamers for cleaning and repairs since the dates given, the dates being those on which the accommodation was ordered: MARIE-THERESE since Sept. 14, 1919; BORDEAUX since Dec. 15; BARLEUX since Dec. 15, and YPRES since Jan. 10, 1920.

These conditions are virtually repeated in most French ports. An entire lack of cohesion and pulling together of the French maritime and railway authorities is playing havoc with the whole question of French transport.

* * *

New French Ship Firm

A new Franco-Anglo Marine Transport Co. has been founded in Paris with a capital of 2,000,000 francs. The object of the association is the freighting of ships, their purchase and sale. Among the names involved are those of M. Andre Lebon, one of the best known names in the world of French shipping; M. Dal Piaz of the Compagnie Generale Transatlantique, the British Furness company, the French Chargeurs Reunis, the Compagnie Sud-Atlantique and others.

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Practical Navigation Guide-II

Problems in Mercator Sailing and in Determining Latitude by Meridional Altitude of Sun—Use of the Sextant

BY V. G. IDEN

HAVING found the latitude and longitude in which the ship is, and knowing the latitude and longitude of the point of departure, the next step is to find the distance made good and the direction of the course sailed. This is a problem in what is known as mercator sailing. Mercator sailing has a very practical application. A navigator should know his location at all times. He decides to make a certain port. The latitude and longitude of that port is known. By mercator sailing he can reckon the direction he must sail and the distance to be made good.

In working out this problem, the latitude and longitude of the points of departure and destination must be known with every reasonable degree of accuracy. Then it is necessary to find the measure of the latitudes from zero, or the equator. For the convenience of the navigator, a good epitome will give a table of meridional parts, or increased latitudes, for every degree and minute. The actual mathematical calculation of such meridional parts is long and laborious and these tables consequently save much labor and give all the measures necessary to a degree of accuracy sufficient for all ordinary problems of navigation. Obtaining the meridional parts for the latitude of departure and the meridional parts for the latitude of the destination by such method, the difference in meridional parts is obtained. We next take the difference between the longitude left and the longitude of destination, which gives the longitude distance sailed or to be sailed. Such difference, first estimated in degrees, minutes and seconds, is reduced to minutes. The logarithm of this number, which can be taken from the table of logarithms of numbers provided in the epitome, is added to the whole number 10. This is done for the convenience of subtraction. From this is subtracted the numerical logarithm of the difference of meridional parts. The answer will be the logarithm of the tangent of the course and, by referring to the table of logarithms of trigonometric functions, the angle in degrees and minutes for which this number is the tangent will be the direction of the course sailed.

In this same table of logarithms of trigonometric functions and opposite the tangent logarithm will be found the corresponding secant translated to a logarithm.

Next it is necessary to find the difference in latitude in degrees. If the latitude in and the latitude of departure are both north or south of the equator the greater is subtracted from the smaller. If one is north and the other south they are added. This difference in latitude is translated from degrees into minutes. The logarithm of this number is then added to the logarithm of the secant of the angle of sailing, which has already been found. This total will be the logarithm of the number of miles made good, or to be made good.

This is really no more than a rule of thumb for the calculation of the distance made good and the course by mercator sailing. By the use of logarithms this calculation is simplified and hastened. Fig. 2 will illustrate a s ing. The ship has traversed the distance from *A* to *B*. We know the latitude and the longitude for the position at *A* and the position at *B*. While all these measures as shown in the figure are straight lines it must be remembered that they represent curved lines laying upon the surface of the ocean and the center of each curve is the center of the earth, supposedly. The distance *A L* represents the meridional parts for the angular distance of *A* from the equator, and the line *B K* represents the meridional parts for the angular distance between *B* and *K*. The difference between these two represents the difference in meridional parts of the latitude from to the latitude to, or the distance *A* to *R*. The difference in the longitude of *A* and the longitude of *B*, translated into minutes, gives the departure, represented by the distance *B* to *R* in the figure. Here we have the measure of the two sides of the right-angled triangle *B R A*, translated into logarithms. By mathematics we know that if we subtract these two logarithms, one from the other, we have the logarithm of the tangent of the angle at *A*, which we have designated as the angle *B A L*, which is the angle of the sailing course. Similarly we know by mathematics that by adding the logarithm of the secant of this angle to the logarithm of the distance *A* to *R*, which is the difference in latitude reduced to minutes, the result will be the logarithm of the hypotenuse of this right-angled triangle, the distance from *A* to *B*, or the number of miles made good or to be made good. Taking an actual example: A ship is in latitude 39 degrees 46 minutes 00 seconds north and longitude 70 degrees 06 minutes 00 seconds west. The captain wishes to make a point which is in latitude 38

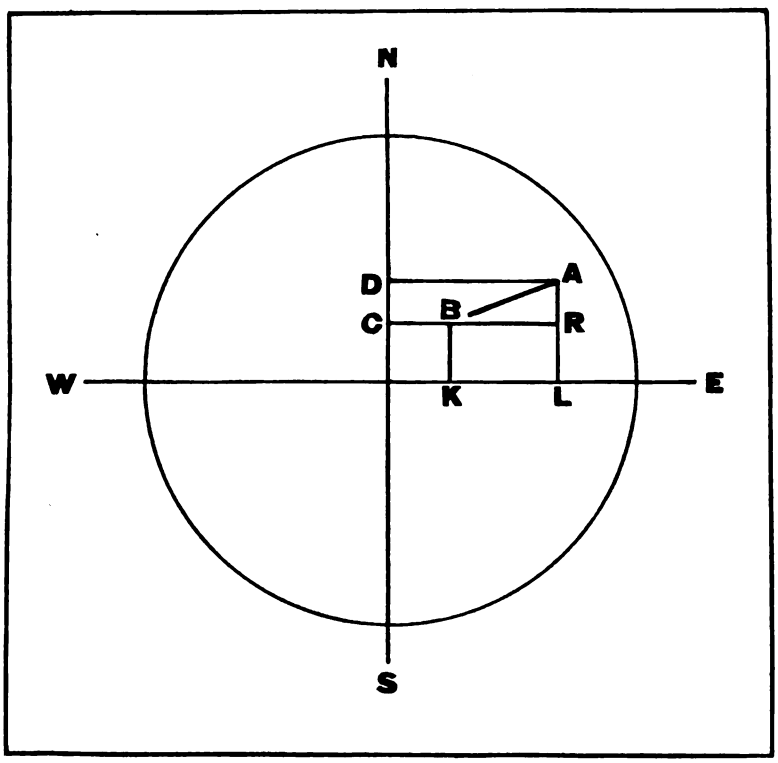

FIG. 2—CALCULATING A COURSE BY MERCATOR SAILING

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degrees 41 minutes 48 seconds north and in longitude 72 degrees 34 minutes 00 seconds west. The calculation is shown in Table III.

Use of the Sextant

Next to the compass the most essential navigation instrument on board the ship is the sextant. This is the instrument with which the navigator measures the angular distance of any celestial body above the apparent horizon.

In Fig. 3 the principle of the sextant is illustrated. The instrument is in the shape of a triangle the base of which is an arc equal to one-sixth part of a circle, graduated from 0 degree to 120 degrees. Fastened to the apex of this triangle is an arm, the index bar, which has a pointer moving along the graduated arc. The pointer *D*, carries a vernier. On the arc, divisions up to 10 minutes can be read. By the use of the vernier, divisions up to 10 seconds can be read. The index mirror, *A*, is fastened to the arm of the vernier. The horizon glass, *B*, attached to one side of the frame, is supposed to be exactly parallel to the index mirror when the vernier is at 0 degree. Between the mirror *A* and the glass *B* are usually some shade glasses to reduce the intensity of the reflected rays when taking an observation. These shade glasses are arranged so that they may be moved out of the line of reflection at will. At *C* is the telescope to which the eye is placed when taking an observation. Sextants are usually fitted with smaller magnifying glasses over the vernier in order to facilitate the reading of the angle of observation.

The principle of the use of the sextant is well illustrated in Fig. 3. The rays of the sun, *S*, are reflected by the index mirror, *A*, to the horizon glass, *B*, to the eye of the observer looking through the telescope, *C*. The index arm of the vernier is moved along the arc, thereby changing the angle of reflection on the index mirror, *A*, until the reflected image of the sun appears to the observer to be on the horizon, *H*. The horizon glass, *B*, is silvered over but half of its surface, so that the observer can see the reflected rays of the sun coincident with an uninterrupted view of the horizon When the reflected image of the sun is coincident with the horizon the vernier, *D*, will give the angular distance of its elevation.

Navigators may use the sextant to measure the angular height of the sun in the heavens by holding the instrument vertically when making the observation. The horizontal angle between any two points, such as two points on shore, can be measured in the same way only by holding the sextant horizontal and reflecting the two objects together.

Navigators are expected to be sufficiently acquainted with the sextant to enable them to make normal adjustments. Four adjustments are possible on shipboard; it is advisable to have any other adjustments attended to by the makers of the instrument. Junior officers are expected to be sufficiently acquainted with the sextant to make the first three of these adjustments while to the captain falls the duty of making the fourth.

First. The index mirror, *A*, is supposed to be perpendicular to the plane of the arc, upon which the vernier moves. Turning the instrument horizontal with the apex toward the eye, it is possible to observe the reflected image of the arc in the index mirror. By moving the vernier along toward the center of the arc it is also possible to observe the reflected arc in the index mirror, at the same time observing the true arc. If the reflected and the true arcs form an unbroken line in the range of vision the index mirror, *A*, is perpendicular to the plane of the arc. If not, the adjustment screws must be worked until they do coincide.

Second. It is also necessary that the horizon glass, *B*, shall be perpendicular to the plane of the arc. First the instrument is held horizontal as though it were intended to measure the angular distance between two points on shore. The vernier is set at 0 degree, and a sight of the horizon is taken through

Table III

Typical Problem In Mercator Sailing

From Lat. 39 deg. 46 min. 00 sec. N —— Meridional parts — 2589.5
To Lat. 38 " 41 " 48 " N —— Meridional parts — 2507.2 (Bowditch, Table 3)

Difference in Lat. 1 deg. 04 min. 12 sec.
1 deg. 04 min. 12 sec. x 60 — 64.2 miles

Difference in meridional parts — 82.3

From Lo. 70 deg. 06 min. 00 sec. W
To Lo. 72 " 34 " 00 " W

The logarithm of 92 is 1.96379 (log. of lo.)
The logarithm of 82.3 — 1.91540 (log. of med. pts.)
10.
(Bowditch, Table 42)

Difference in Lo. 1 deg. 32 min. 00 sec.
x 60
92 miles

10.04839 which is the logarithm of the tangent of the course.
This is the logarithm of the tangent for S 48 deg. 11 min. W. (Bowditch, Table 44.)

The logarithm of the secant of 48 deg. 11 min. is 10.17604 (Bowditch, Table 44)
The logarithm of 64.2 is (Bowditch, Table 42) 1.80754

1.98358 which is the logarithm of 96.2 (Bowditch, Table 42)

The distance made good, or to be made good, therefore, is 96.2 miles.

Table IV

Finding Latitude at Time of Observation

Correct observed altitude	72 deg. 10 min. 20 sec. S	
Indicated error	1 " 20 " —	
	72 deg. 09 min. 00 sec.	
Semidiameter of the sun on June 4	15 " 47 " +	
	72 deg. 24 min. 47 sec.	
Dip of horizon for 20 feet is (Bowditch, Table 14)	04 " 23 " —	
	72 deg. 20 min. 24 sec.	
Refraction of sun's rays at 70 degrees (Bowditch, Table 20A)	19 " —	
	72 deg. 20 min. 05 sec.	
Parallax for 70 degrees (Bowditch, Table 16)	03 " +	
True altitude of sun	72 deg. 20 min. 08 sec. S	
Subtracting true altitude from 90 degrees	90 "	
	17 deg. 39 min. 52 sec. N	which is the Zenith Distance

Lo. by D.R. is 73 deg. 42 min. 51 sec W, translating this into time (Bowditch, Table 7)
73 deg. — 4h 52m
42 min. — 2m 48s
51 sec. — 3s
4h 54m 51s W

Local apparent time on board ship was noon of June 4, or 4d. 00h 00m 00s. Since the ship has been proceeding west the longitude in time is added to this, making 4d 4h 54m 51s, which is the Greenwich apparent time.
Sun's declination for Greenwich on June 4, 1919, by Nautical Almanac was 22 deg. 20 min. 33 sec. N, with a plus hourly variation of 18.26. The 4h 54m 51s equals approximately 4.9h. 18.26 multiplied by 4.9 equals 89.474 seconds, which divided by 60 gives 1 min. 29 sec. for the correction.

Declination for Greenwich	22 deg. 20 min. 33 sec. N	
Correction	01 " 29 "	
	22 deg. 22 min. 02 sec. N	— Declination at ship at time of observation.
Zenith Distance	17 deg. 39 min. 52 sec. N	
Dec. at ship	22 " 22 " 02 " N	
	40 deg. 01 min. 54 sec.	— Latitude in.

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the telescope. If the instrument is true the true and the reflected horizons will coincide. If the two do not, it is necessary to work the adjustment screws to the horizon glass until they do coincide.

Third. The index mirror and the horizon glass should be parallel. This adjustment is made in a manner similar to the making of the second adjustment, only instead of holding the sextant horizontally it is held vertically as though an observation of a celestial body were being taken. The vernier is placed at 0 degree, and in that case the reflected and the true horizon should appear as a continuous and unbroken line. If they do not, the screws near the horizon glass should be worked until they do coincide.

Fourth. Assurance must be had that the line of sight is parallel with the plane of the arc. The usual method of making this adjustment is to use a telescope in which are placed two wires, parallel to each other and equidistant from the center of the telescope. This telescope is screwed on the sextant and the tube containing the eyeglass is turned until the wires are parallel to the plane of the instrument. Then two clearly defined objects which are further apart than an angular distance of 90 degrees are selected for the test. These two objects may be two stars in the heavens. The reflected image of one object is brought into exact coincidence with the direct image of the other at the inner wire; by altering slightly the position of the instrument the two objects are made to appear on the other wire. If the contact of the two remains perfect throughout this test, the axis of the telescope is parallel to the arc; if not, the screws in the collar which holds the telescope should be worked until the contacts do appear perfect.

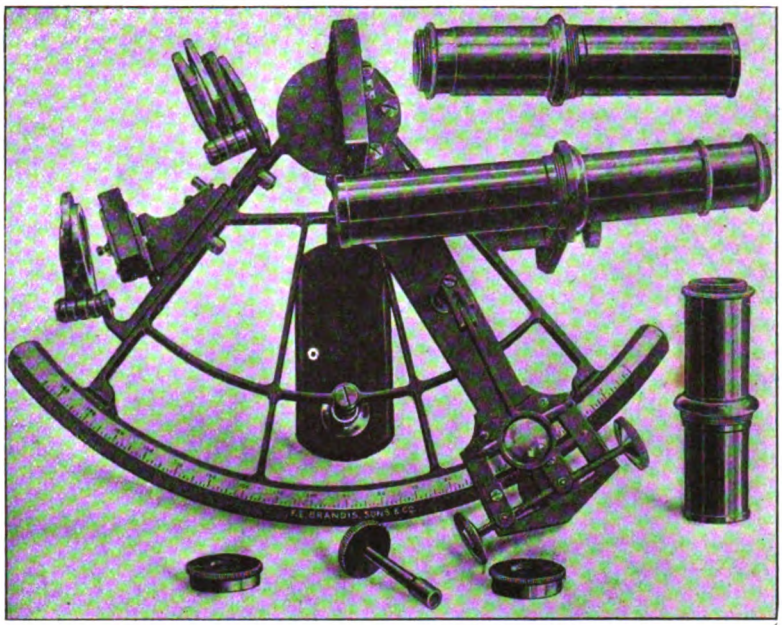

FIG. 4—AN AMERICAN-MADE SEXTANT

If for any reason it is impossible to make any one of these adjustments, the navigator must resort to finding his index error (*I. E.*). To do this, it is but necessary to set the vernier at 0 degree and take an observation of the horizon. To the vernier is a tangent screw by means of which the vernier may be moved with greater precision than by hand. This screw should be worked until the true and the reflected horizons appear in an unbroken line. The reading of the vernier will be the index error. If it is to the left of 0 degree on the arc it will be minus and deducted, and if it is to the right of 0 degree it will be plus and added to any reading of an observation to obtain the true reading.

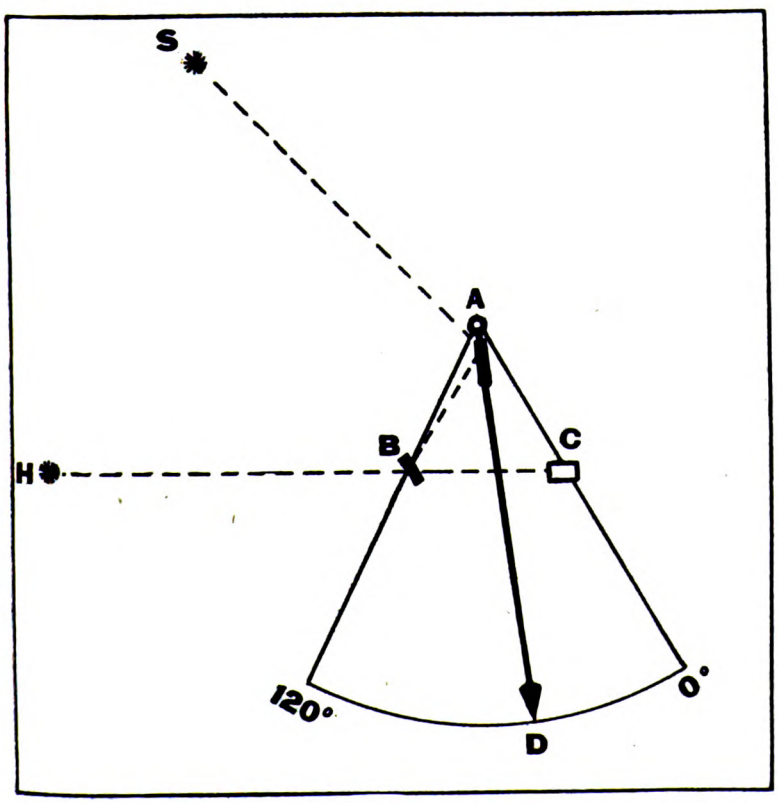

FIG. 3—HOW THE SEXTANT IS USED

Latitude by Meridional Altitude of Sun

When it is noon at the ship, at which time the sun has reached its highest point in the ascension of the heavens, the observed altitude of the sun is measured by the sextant. In taking this observation care should be exercised first to discover whether the sextant has an error and that this error is compensated for. The height of the eye of the observer from the level of the surface of the ocean should also be known. While accuracy is always at best but approximate there is no excuse for not taking all due caution since any slight deviation may cause an undue result.

First, after taking the observation, the indicated error (*IE*) of the sextant must be substracted or added to this observation as the error is positive or negative as the case may be. This will give the correct observed altitude. To insure further accuracy it is necessary to take into account the diameter of the sun as all measurements must be made as from the center of the sun. This makes it necessary to add to this observation the semidiameter of the sun. The semidiameter is constantly varying and the

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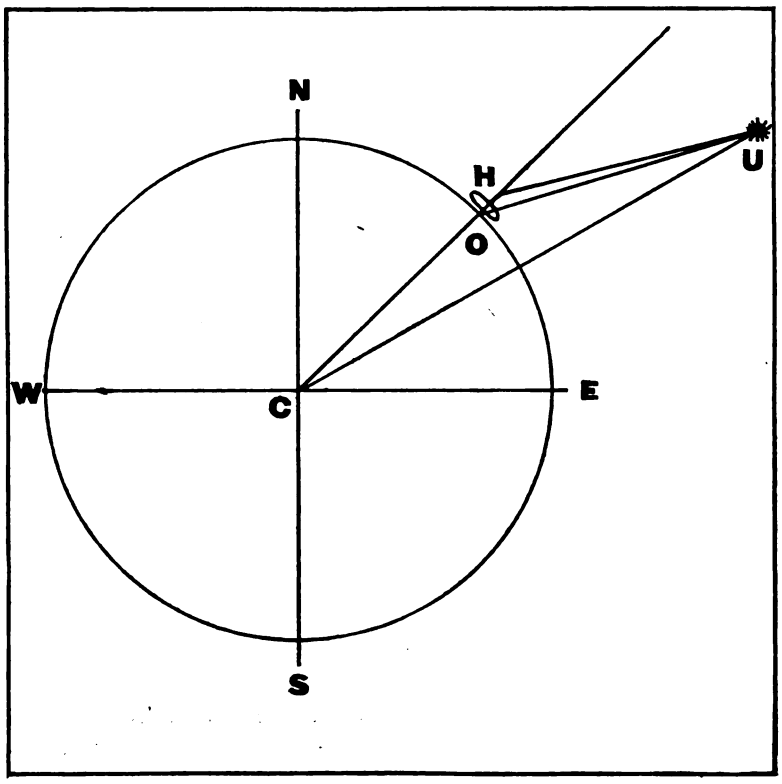

FIG. 5—DETERMINING TRUE ALTITUDE OF SUN

actual measurements for each day of the year have been calculated by the governmental experts and published in the *Ephemeris and Nautical Almanac.*

With these two corrections, therefore, the observed altitude of the sun will be represented by the line *HU* in Fig. 5. But we know that when the observation is taken, the person using the sextant was holding the instrument a certain number of feet above the surface of the ocean. This elevation of the eye of the observer gives a certain dip to the sea horizon. The tables of the epitome will give the measure of correction in minutes and seconds for each foot of elevation of the eye, which correction should be substracted from the altitude already obtained. This is the altitude represented by the line *OU* in Fig. 5.

But it is known that the sun's rays are bent in passing through the different strata of atmosphere. This is known as refraction. The refraction of the rays would be nothing if the apparent altitude were 90 degrees, but would increase with every reduction in altitude. From the tables of the epitome should be taken the mean refraction for the sun's rays at the apparent altitude already observed and substracted from the altitude already obtained. In this way the measure of altitude of the line *OU* is corrected.

But now we have obtained only the observed altitude as from the surface of the ocean upon which the ship is floating, and it is necessary to obtain the altitude of the sun as though that had been measured from the center of the earth. The difference here is known as the parallax and this has been calculated for each degree of altitude and incorporated in a table in the epitome. From the epitome, therefore, it is necessary to take the parallax of the sun for the degree of altitude already calculated and add it to that altitude. The result will be the true altitude of the sun, which is represented by the line *CU* in Fig. 5.

From the celestial horizon to the zenith of the sky is 90 degrees, or one-quarter of the arc of a great circle. We have only obtained the altitude of the sun so far and to obtain the zenith distance of the sun it is necessary to substract this altitude from 90 degrees. It should here be remembered that if the altitude of the sun is south, the zenith distance will naturally be north, and that the opposite will be the case if the altitude is north.

We have now measured the true altitude of the sun and found its zenith distance. If the pole of the earth remained perpendicular to the orb of its transit throughout each hour of the day and each day of the year, this measure of zenith distance would be a measure of the latitude of the ship at the time of observation. But it is known that such is not the case, so that it is necessary to find the declination of the sun for the particular month, day, hour and minute of the time of taking the observation and add this declination to the found zenith distance, which result will be the latitude of the ship. This variation in the declination of the sun is illustrated in Fig. 6.

It is presumed that the longitude of the ship has already been calculated by dead reckoning. We know the day of the month. The longitude is reduced to hours and minutes, which is easily done by using the table in the epitome for conversion of arc and time.

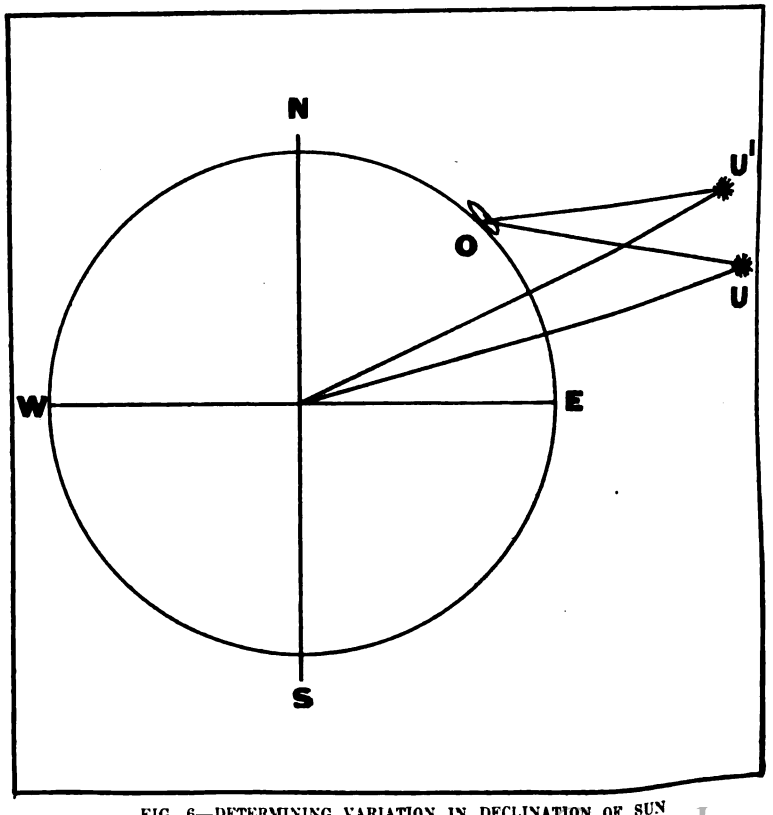

FIG. 6—DETERMINING VARIATION IN DECLINATION OF SUN

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If the longitude is west of Greenwich, this longitude in time is added to the days of the month, and if east of Greenwich is substracted.

The *Nautical Almanac* will give the declination of the sun for Greenwich on that particular day of the month in that particular year and will also give the hourly variation in the declination, indicating whether this variation is a negative or a positive quantity. The longitude in hours, minutes and seconds, reduced to hours and fractions thereof and multiplied by the hourly variation for that particular date will give the correction in minutes and seconds. This is substracted from the declination at Greenwich if it is decreasing, and added if it is increasing. The answer will be the correct declination of the sun at the particular instant of the observation on board ship.

It must be remembered that when the longitude is west, the longitude in hours, minutes and seconds will be added to the days of the month. When the longitude is east, it will be substracted.

In this way, it has been possible to obtain the zenith distance and the declination of the sun at the time of taking the observation. The *Nautical Almanac* will indicate whether the declination of the sun is positive or negative. The positive sign means that it is north and the negative sign means that it is south. Combining the zenith distance and the declination of the sun, we obtain the latitude in which the ship is. If the zenith distance and the declination are both north or south they are added to obtain the latitude. If one is north and the other south, the smaller is substracted from the larger and the resulting latitude is given the direction of the larger.

As an example of the practical application of this method of reckoning position, we will assume that on June 4, 1919, the ship was in longitude 73 degrees 42 minutes 51 seconds west by dead reckoning. A noon sight was taken that day and the observed altitude was 72 degrees 10 minutes 20 seconds south The indicated error of the sextant was —1 minute 20 seconds (minus error). The height of the eye of the observer was 20 feet. How to work out the latitude at the time of observation, which was when the sun was at meridional altitude, is shown in Table IV.

(To be continued)

Classify All U. S. Ships in American Bureau

Under an agreement between the United States shipping board and the American bureau of shipping, effective March 17, all vessels built or building to British Lloyds classification, will be surveyed by the American bureau, with a view to classification in the bureau.

Vessels already completed under Lloyds classification will be surveyed by the bureau as rapidly as possible and if found satisfactory will be granted classification. Vessels now under construction will be supervised by the bureau surveyors during the remainder of the construction and on completion, if satisfactory, will receive classification. The assignment of freeboard in all cases will be made by the American bureau of shipping. Where the freeboard has already been assigned by Lloyd's Register, this will be changed to the requirements of the bureau.

This agreement involves approximately 395 vessels now in operation and 75 in course of construction.

This agreement shows that the American bureau of shipping classification will be the recognized classification on vessels constructed by the Emergency Fleet corporation. The American bureau is thus firmly established as the recognized classification society in this country, a matter of utmost importance in building up the American merchant marine. The question of classification of ships in this country prior to the war, was one to which American marine interests paid little attention. The practice was to look to the English society to approve the construction of American vessels. The country's present position as a leading maritime nation made clear the value of an American society to pass upon ships built in American yards.

The headquarters of the bureau are in New York, where a staff of highly trained technical men are employed. Branch offices are maintained at all important shipbuilding localities and manufacturing centers where shipbuilding material is made, with experienced surveyors in charge.

Agencies have been established in all parts of the world, to cover the inspection of vessels classed with the bureau. The officers are as follows: Stevenson Taylor, president; A. C. Pessano, E. P. Bertholf, C. O. McAllister, Louis F. Bourke, William H. Todd and Frank Gair Macomber, vice presidents; J. W. Cantillion, secretary; G. P. Taylor, treasurer; Edward G. Tuck, chief surveyor, and David Arnott, deputy chief surveyor. The Great Lakes department is in charge of H. N. Herriman, as manager, the main office being in Cleveland, with branch offices in Detroit, Buffalo, Milwaukee, Duluth and Toronto, Ont.

The American Bridge Co., Pittsburgh, was low bidder for three steel barges, bids for the construction of which recently were asked by the Mississippi river commission. The barges are to be of deck type, 120 feet long, 30 feet wide and 7 feet deep.

1920 Great Lakes Red Book Now Ready

THE 1920 edition of the *Great Lakes Red Book* is now being distributed. It lists 324 fleets and more than 1000 separate vessels, with the names of the captains, engineers and owners of each vessel. As in previous editions, it is conveniently indexed to enable the user instantly to find the information he is seeking. This is arranged by means of an alphabetical list giving the names of all vessels, each name being followed by a designated fleet number. This index is followed by a list of owners, masters and engineers, alphabetically arranged and carrying consecutive fleet numbers. The superintendent of each steamship line is also included. This section is followed by a list giving the gross tonnage capacity of all bulk freighters operating on the lakes. The gross tonnage is figured on approximately 19-foot draft. Both steamers and barges are listed, each type being properly designated. This is the seventeenth edition of the *Great Lakes Red Book* and, as in past seasons, it is enjoying a wide circulation due to the fact that those interested in Great Lakes maritime affairs have come to rely upon it as the most authentic source for information of this kind. A list of supply houses, fuel docks, repair facilities, etc., at each port is also included. The convenient size of the book, 3 x 4¼ inches, permits it to be carried in the pocket without inconvenience, thus providing a means of ready reference. The book is printed on heavy paper.

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Marine News in a Personal Way

Intimate Gossip About What Leaders in the Maritime World Are Doing

MARTIN J. GILLEN, Racine, Wis., executive assistant to the chairman of the shipping board, has been nominated by the President to be a member of the board, succeeding Henry M. Robinson, who resigned some time ago. Mr. Gillen is a graduate of the University of Wisconsin, and practised law until 1913, when he took up corporate reorganization work. He reorganized the Mitchell Motor Co., the Mitchell Wagon Co. and the Racine Rubber Co. He is author of the industrial mobilization plan, the basic principles of which formed and controlled the war industries board with which Mr. Gillen was connected as a dollar-a-year-man. Mr. Gillen has been elected as a trustee of the shipping board.

* * *

FREDERICK SIDGWICK, who was technical representative of the British ministry of shipping in Canada and later assistant superintendent of the Havana Marine Railways has opened an office in Havana, Cuba, as a consulting naval architect and marine surveyor.

* * *

J. H. BROWN has resigned as traffic manager of the International Shipbuilding Co., Pascagoula, Miss. He was formerly traffic manager for the Gulf & Ship Island railroad at Gulfport, Miss., and at one time was associated with the marine department of the New York Central lines.

* * *

R. B. CROSBY, formerly connected with the International Shipbuilding Co., Pascagoula, Miss., has become connected wtih the Preferred Finance Co.

* * *

E. S. MACK, formerly with the Maritime Transportation Co., has joined the chartering department of David Cohen & Co., ship owners, ship brokers and steamship agents, New York.

* * *

VERNON BASH, formerly with Hufnagel, Plotier & Co., New York, has become manager of the chartering department of the Globe Chartering Corp., New York.

* * *

EDWIN J. BEUGLER recently was elected vice president in charge of engineering of the Foundation Co., New York. JOSEPH H. O'BRIEN was appointed chief engineer.

* * *

HORTON BARR, for some time assistant to the executive in charge of the chartering department of the United States shipping board, has joined the staff of the Atlantic Chartering Co., New York, of which Douglas Donald, son of John Donald, shipping board commissioner, is the head. H. A. DUFFY has taken Mr. Barr's place.

* * *

CAPT. FRANK E. FERRIS has resigned as vice president and general manager of the Export Steamship Corp., New York.

* * *

T. E. REEVE and W. J. CORNISH, who have been in the export freight forwarding business for some years, are president and secretary respectively of the Reeve Shipping Co., New York, which has lately established branch offices in Chicago and Boston.

* * *

RUSSELL HODGE FELTUS, formerly with the Feltus Shipping Corp., New York, is now connected with the Gardner Shipping Co., New York.

* * *

C. A. SULLIVAN has become head of the newly organized chartering department of Davis & Gilchrist, export freight contractors, New York.

* * *

WILLIAM H. QUICK JR., has been appointed freight agent of the Tropical Steamship Corp., New York, to succeed John F. Daly, who recently resigned.

* * *

RICHARD P. STEGER, who has had years of experience in the shipping business, has established himself in the export and import trade at 116 Nassau street, New York.

* * *

J. H. BEAUDUY and J. M. PETIT have established the Atlantic Commercial Co., New York, which will conduct an export business in a general line of merchandise. Mr. Beauduy formerly was connected with J. Amsinck & Co., New York, and more recently was general manager for Andre Weill & Co. Mr. Petit was formerly export manager for the M. O. M. of West Indies, Inc., and prior to that was associated with the Whitall, Tatum Co.

* * *

M. J. DONOHUE, Malden, Mass., for 15 years connected with the Cunard line, has been appointed city freight solicitor for both the Cunard and Anchor lines. Mr. Donohue is well known in shipping and transportation circles.

* * *

CAPT. C. C. DECKER, employed by the Eastern Steamship Lines, Inc., Boston, for the past 12 years, has been given command of the steamship POWHATAN, formerly the HAMBURG of German registry, by the Munson line, and will go into the trade between New York and Buenos Aires.

* * *

PIERCE J. MCAULIFFE, who recently resigned as manager of the ship construction division of the United States Shipping Board Emergency Fleet Corp., has opened an office at 17 Battery place, New York, as consulting engineer specializing in hydraulic dredging and excavating. He expects also to give special attention to reports and investigations of shipyard management and operation. Mr. McAuliffe entered the Emergency Fleet corporation service in August, 1917, as technical aide to Admiral Bowles. He was appointed executive head of the department of inspection and production of the division of ship construction in September, 1917, became assistant manager of ship construction in January, 1919, and succeeded D. H. Cox on May 1, 1919, as manager of ship construction when Mr. Cox left the services of the corporation.

* * *

CAPT. P. H. UBERROTH, United States navy, will be captain of the port of Sault Ste. Marie, Mich., and vicinity, and commanding officer of the St. Mary's river patrol during the season of 1920. He has been in command of the United States steamship BEAR for the past three years. He was first on duty with the St. Mary's river patrol in 1897, and again in 1903-4. From 1907 to 1909, he commanded the United States steamship TUSCARORA on the Great Lakes with headquarters at Milwaukee.

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Marine News in a Personal Way

Intimate Gossip About What Leaders in the Maritime World Are Doing

COMMANDER JAMES REED has resigned from the construction corps, U. S. N., to become assistant general manager of the Los Angeles Shipbuilding & Dry Dock Co., Los Angeles. He served for four years in the League island navy yard, and since 1914 has been superintendent of hull construction at the Mare island navy yard. Other officers of the company are: Fred L. Baker, president and treasurer; S. L. Naphtaly, vice president and general manager; Dan Murphy, vice president and assistant treasurer; Erle M. Leaf, secretary; F. G. Phillips, comptroller; Francis P. Duncklee, assistant secretary; John Murray, works manager.

* * *

FRANK F. BOYD and NORRIS R. SIBLEY have been placed in charge of the newly established division of the marine department of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., in its sales office, New York. Mr. Boyd served as chief engineer of the U. S. S. JUPITER, the first electrically propelled ship of the navy during the war with Germany, and later was chief engineer of the submarine base at New London, Conn. He has had wide experience in the manufacture and installation of power machinery, marine and stationary, having supervised the machinery installations in many destroyers of the navy and assisted in converting the S. S. MAROPOSA, the first oil-burning seagoing passenger vessel, from a coal to an oil burner. Mr. Sibley has been with the Westinghouse company in various capacities since he left the army transport service. Prior to that he was connected with various ship and engine builders and several shipping companies.

* * *

J. J. HARTNEY has resigned from the Green Star Steamship Corp., New York, to become associated with the Italian Star Line, Inc.

* * *

CAPT. CHARLES B. MCVAY has been appointed commander of the Washington navy yard, succeeding Rear Admiral A. W. Grant, who has retired from active service.

* * *

C. J. STEEN, chief engineer of the Tacony Steel Co., has been appointed chief engineer of the Penn Seaboard Steel Corp., Philadelphia. He will have supervision of all engineering and designing of the Penn Seaboard and Tacony plants. As chief engineer of the Tacony Ordnance Corp. Mr. Steen laid out much of the open-hearth steelmaking, forging and heat treating plant which the corporation built during the war. Following the completion of government contracts and the purchase of the Tacony ordnance plant by the Tacony Steel Co., Mr. Steen was made chief engineer of the consolidated or-

EDWARD G. TUCK
Who Has Been Appointed Chief Surveyor of the American Bureau of Shipping

ganizations. His new appointment gives him a much broader field in the New Castle, Chester, Tacony and New Haven works of the Penn Seaboard Steel Corp.

* * *

W. F. SEXTON, formerly in charge of the Atlantic terminal of the Panama railway, has been appointed manager of the reorganized Columbia-Pacific Shipping Co.'s traffic department at Portland, Oreg.

* * *

M. F. CROPLEY, assistant general freight agent of the Pacific Steamship Co. at San Francisco, has been appointed successor to F. M. Barry, general agent. The latter recently resigned to become general manager for Struthers & Dixon, extensive operators in the Orient. Struthers & Dixon have effected a coalition with the Green Star line and are handling several new steamers built for the latter firm at Portland, Oreg.

* * *

A. C. WATSON, a steamship man of wide experience, will shortly leave for Batavia to take up his new duties as agent for Struthers & Dixon, the Green Star and Cosmopolitan lines in the East Indies. These companies anticipate a heavy commerce with the Straits Settlements and Mr. Watson will make an energetic bid for trade.

* * *

T. B. WATSON, an old employe of the Pacific Steamship Co., has been appointed district freight agent at San Francisco for the company, succeeding M. F. Cropley, promoted. A. J. MICKLEY has been named as assistant general freight agent at Seattle.

* * *

H. L. HUDSON, an experienced and widely known railroad man, has retired from the importing and exporting business in Seattle to assume the duties of manager of the traffic bureau of the port of Portland. The Oregon port has inaugurated an aggressive fight for offshore business and Mr. Hudson's appointment presages an active campaign.

* * *

CAPT. A. T. HUNTER, a widely known Pacific mariner, has been appointed port captain of the General Steamship Corp., with jurisdiction over Seattle and San Francisco. Captain Hunter, who is a son of the late Capt. J. C. Hunter, who sailed the Pacific for years, was master of the transport NORTHERN PACIFIC during the war. He will go out in command of the company's steamer MERIDEN in May to open up agencies on the west coast of South America.

* * *

CHARLES F. LEDERER, until recently superintendent of way of the Milwaukee Electric Railway & Light Co., Milwaukee, has joined the Metal & Thermit Corp., New York.

* * *

W. F. TAYLOR, formerly with the shipping board, on June 1 will become president of the Export Transportation Co., Baltimore, operator of the Oriole lines, and vice president of the International Freighting Corp., New York and Philadelphia.

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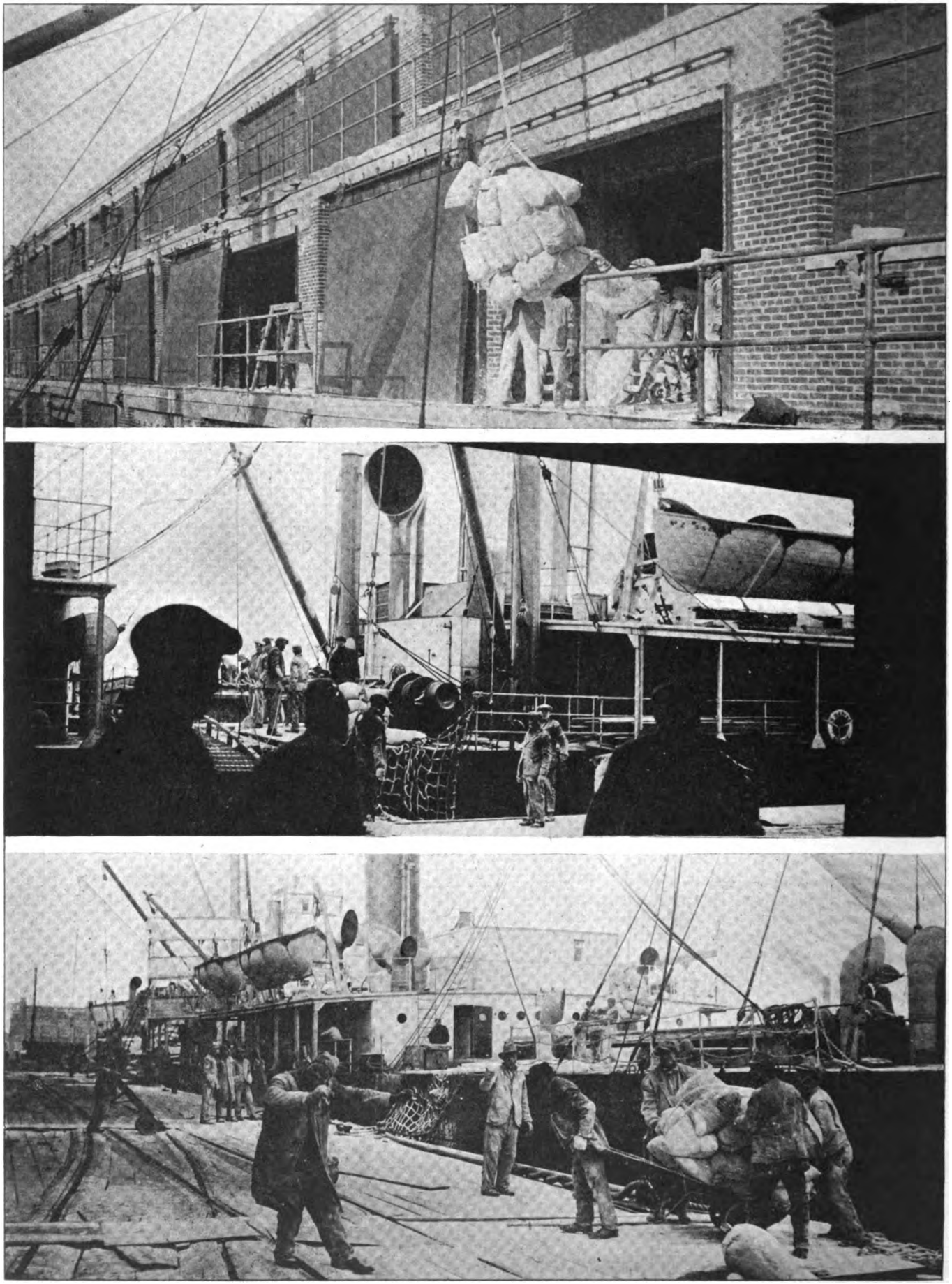

HANDLING FLOUR FOR OVERSEAS SHIPMENT AT THE ARMY BASE, PHILADELPHIA. THIS TERMINAL WAS ALTERED TO MEET DEMANDS OF PEACEFUL COMMERCE AND HAS PROVED WELL ADAPTED FOR SUCH SERVICE

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New Terminal at Philadelphia

Army Base Just Completed on Delaware River Was Modified To Meet Commercial Needs—Has Large Warehouse Facilities

THE Philadelphia army supply base occupies 1300 feet of the south Philadelphia waterfront between Delaware and Oregon avenues. It is directly opposite the plant of the New York Shipbuilding Corp., Camden, N. J., and in the center of the Greenwich Point district, the largest anchorage area of the port of Philadelphia. It is, therefore, exactly 100 statute miles from the sea and 60 miles above Delaware bay.

Ground was not broken for this base until August, 1918, so that it was the last of the seven army port terminals to actually get under way. Construction had progressed but three months at the time the armistice was signed, so that this terminal, which has just been finally completed, represents in part the installation originally proposed to handle wartime military shipping through the port of Philadelphia, but materially modified to meet altered economic conditions.

The principal features of this base include three piers having approximately one and one-half miles of berthing space; pier sheds, power plant and four miles of railroad trackage within the property. This terminal differs from the other army bases in one important particular; it contains extensive and completely equipped warehouse facilities on one of the largest piers along the eastern seaboard.

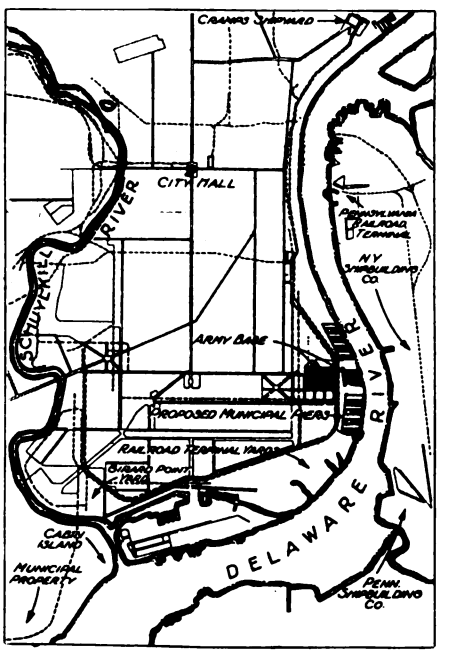

FIG. 2—RELATIVE LOCATION OF ARMY BASE

The base occupies approximately 12 acres of ground and represents an expenditure of $13,500,000. The general contractor for the project was the Snare & Triest Co., the engineering details of the layout and construction being handled by Day & Zimmerman under the supervision of the construction division of the army.

A number of interesting, and many difficult, construction problems were encountered during the progress of the work. More than 50,000 pilings were driven in building wharves and piers. The difficulties in securing deliveries of this and other material through one of the most congested traffic areas of the east, the scarcity of labor in a district where mechanical skill had for years been at a high premium—these and other handicaps were overcome and the base made ready for partial utilization within 12 working months.

Berthing facilities consist of two main piers, respectively 1500 and 1320 feet long by 290 feet wide, with a car

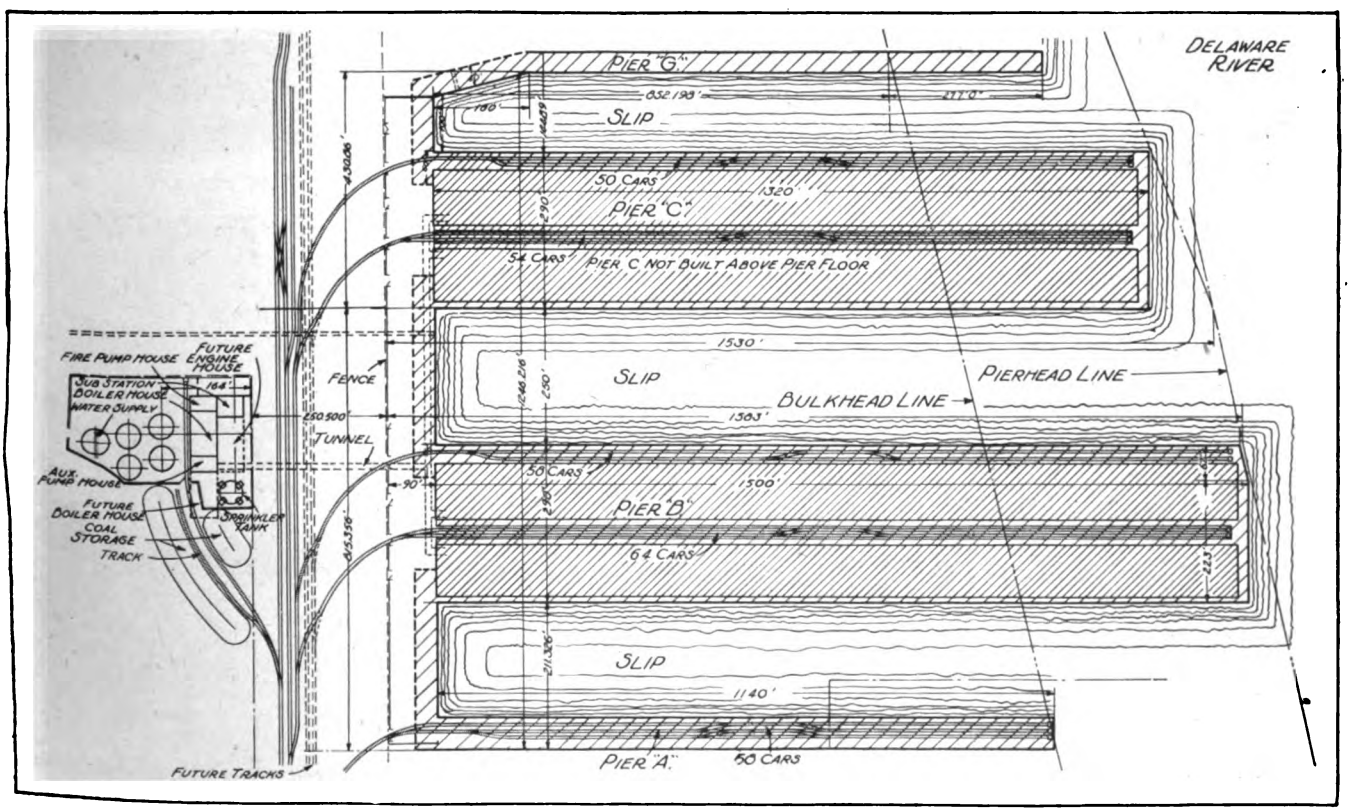

FIG. 1—PLAN OF NEW TERMINAL AT PHILADELPHIA

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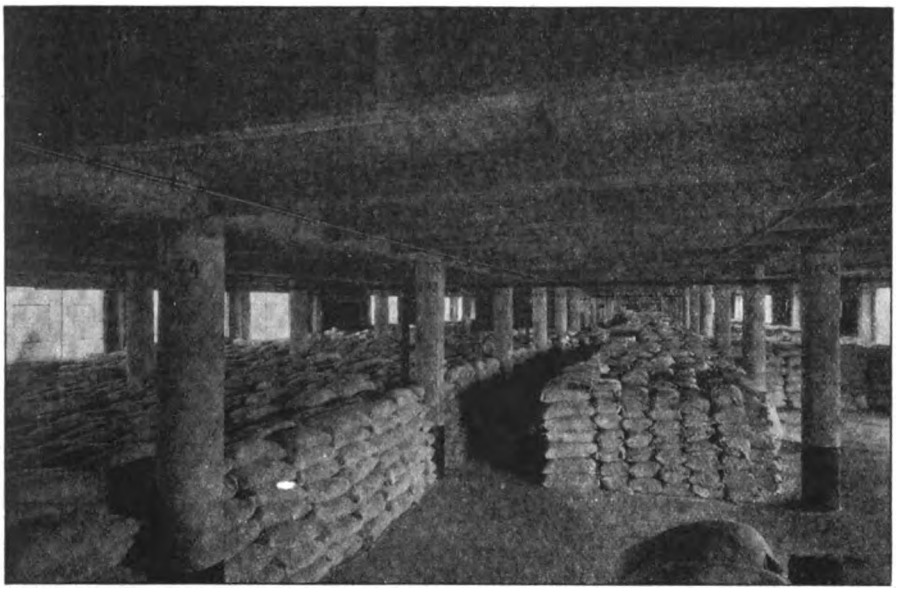

FIG. 3—FLOUR STORED ON UPPER FLOOR OF PIER SHED

pier 1140 feet long, and a 1050-foot pier bulkhead on the north. Three berthing slips are thus provided with an aggregate working wharfage of 6780 feet, sufficient to handle simultaneously fourteen 10,000-ton ships. The drawing depth of 35 feet at piers entailed the removal of upward of 2,000,000 cubic feet of material. The port of Philadelphia has at present a 30-foot mean low water channel to the sea, while a 35-foot channel is authorized and is about two-thirds completed. Few, if any other Philadelphia piers, have a berthing depth of more than 30 feet; the general average is closer to 20 or 25 feet.

The piers of the army base have been generally completed as provided for in the original plans, but the pier sheds have been materially curtailed. While it was intended to erect modern storage warehouses on both piers, the structures on the smaller, Pier C, were later eliminated from the construction plans and that pier completed as an open deck car track pier, without shelter.

Provides Large Pier Shed

The bulkhead pier A merely serves for loading and unloading direct from cars spotted along the wharf at ship's side and for temporary berthing facilities. The latter pier, as well as the smaller bulkhead on the extreme north, were originally designed for handling heavy ordnance materials directly into holds of vessels but it is improbable that they will be of material value under existing conditions.

The pier shed provided on Pier B is a modern building of reinforced concrete and brick construction, three stories high and 1500 by approximately 100 feet in base dimensions. It consists of two distinct wings between which are double railroad tracks, depressed to permit the transfer of freight direct to the loading platform of either wing. Staggered balcony platforms are also built along the two upper stories of both sides, so that cargo may be transferred from railroad cars directly to any section of the warehouses. These tracks are also bridged by five walk-overs, joining the opposite sections of the second and third floors of both wings, making possible the transfer of materials by truck between upper floors in either direction.

The pier shed is also laid out in five complete sections of approximately 27,000 square feet floor area each. These sectional divisions may be maintained by means of fireproof iron doors, or any single floor may be thrown partially or entirely open, ac-

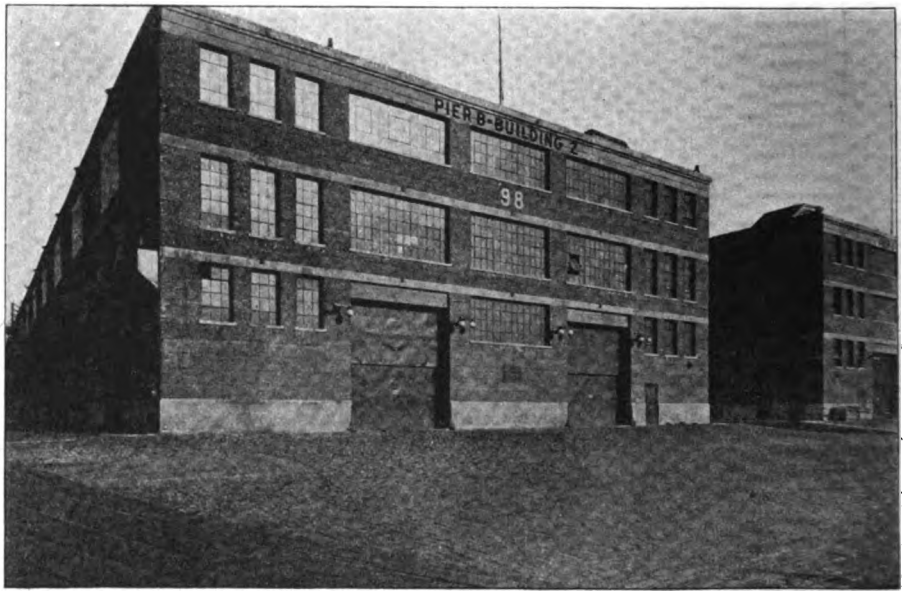

FIG. 4—TRUCK AND DRAY APPROACH TO SHED ON PIER B

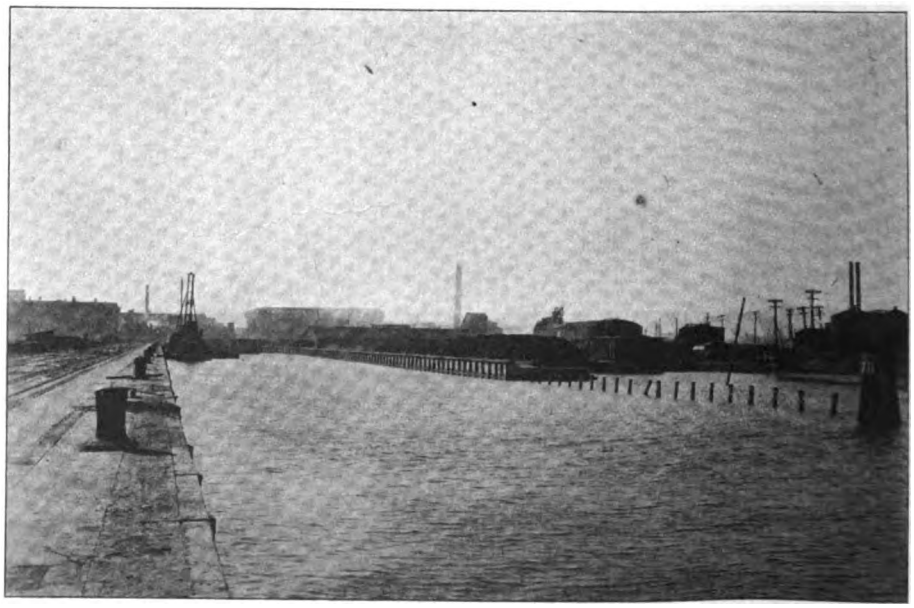

FIG. 5—VIEW OF SLIP ON NORTH OF OPEN DECK PIER C

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cording to the nature of the cargo stored. This system also makes possible the effective isolation of any particular area in case of fire.

The floor load capacity of the pier shed is 500 pounds per square foot on ground floors, and 300 pounds on upper floors. No provision is made for heating the ground floors, but the second and third floors may be heated to 45 degrees at exterior zero, and the administrative sections and toilets to 70 degrees. The entire building is protected from fire by the installation of an automatic sprinkler equipment throughout. The dry system is used to prevent freezing. Sprinklers are fed from a 150,000-gallon steel tank erected alongside the power house.

Ten elevators are installed in the building, one serving each section of each wing. These elevators have a load capacity of 10,000 pounds each. Designs have been prepared for the later installation, as required, of 10 additional elevators and 10 spiral chutes.

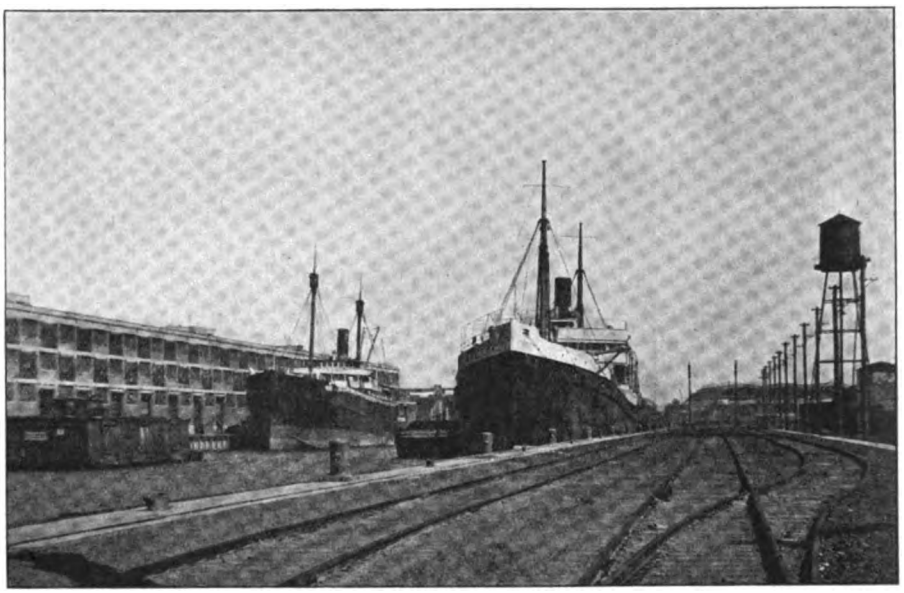

FIG. 8—CAR TRACK PIER A FOR HANDLING HEAVY MATERIALS

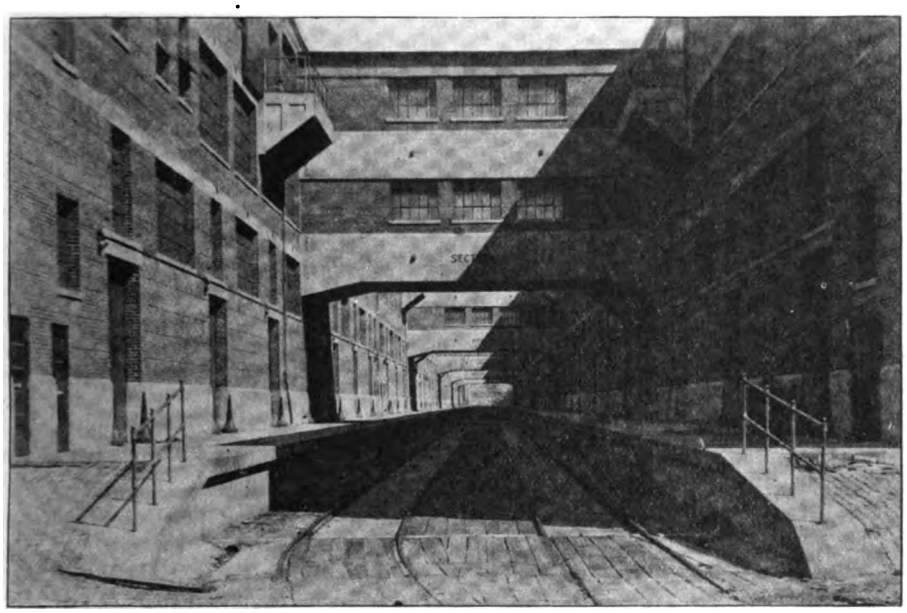

FIG. 6—BETWEEN SECTIONS OF PIER SHED ON PIER B

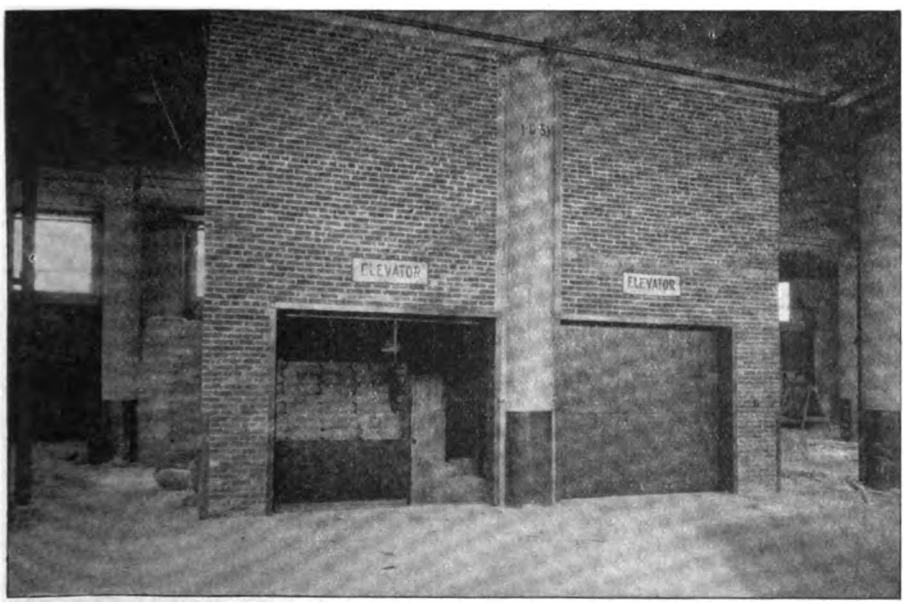

FIG. 7—BATTERY OF ELEVATORS—TEN ARE INSTALLED IN PIER SHED

The warehouse capacity of the terminal as completed is 175,000 short tons of cargo, approximately the equivalent of a freight train 88 miles in length. In addition to warehouse storage, 354,160 square feet of open storage facilities are provided in other parts of the terminal.

Trackage for 350 Cars

Double railroad trackage with capacity of 58 cars is provided on the north side of Pier B. Necessary rails and supports are also provided for the installation of a traveler crane. This crane is now being erected and will be in operation within a short time. No tracks are installed on the south side of this pier but the two upper warehouse floors have loading platforms to which cargo may be moved from the inside by truck and thus transferred by ship's gear direct to vessel hold, or *vice versa*. The total railroad trackage on all piers has a capacity for 350 cars.

Electric current for operating the terminal is secured from the lines of the Philadelphia Electric Co. The estimated power consumption under full load conditions, including current for operation of all winches, cranes, etc., is 632 kilovolt amperes. The present demand, however, is for but 470 kilovolt amperes.

The plant power house contains four 500-horsepower boilers, fire and auxiliary pump and electric substation. Tunnel connections between the power house and piers are installed.

An extensive freight classification

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and storage yard, including 1,600,000 square feet, was a part of the original project. During the period of construction a government reservation was established at Greenwich Point, covering an area of 200 city blocks, on the site of the proposed classification yard. This ground, which had previously never been improved, was then leveled off and at the same time made suitable for the installation of railroad tracks and for open storage purposes. Although this ground was never purchased, the government retained an option on it and it will be, for the immediate future at least, available for any improvements which commercial utilization of this property may necessitate.

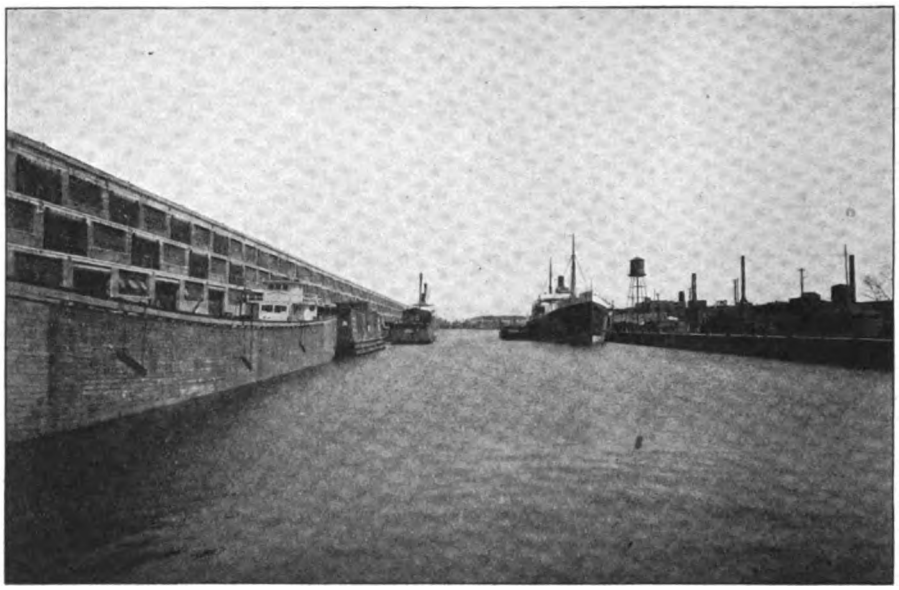

FIG. 9—SLIP BETWEEN PIERS A AND B IS 212 FEET WIDE

The complete terminal, as at first projected, would have materially relieved the congestion which existed during the war owing to the commandeering of many Philadelphia piers for war service. As it happened, however, prior to the cessation of hostilities, the base had only been sufficiently completed to permit the handling of one army transport at its piers. Yet this terminal as it now stands is a very considerable addition to the Philadelphia waterfront and is at the same time susceptible for such improvements as shipping at that point may later require.

The estimated capacity of this plant includes handling 11,200 tons over ship's side, as well as loading or unloading and storing the contents of 700 freight cars in a 10-hour day. How near these figures may be materialized in actual operations has never been determined, but it is certain that this terminal at least compares favorably in potential efficiency with any of the pier facilities of the port of Philadelphia.

The base, since its completion, has been extensively used by the United States Grain Corp. for the overseas shipment of flour, as recently authorized by congress. This flour has been brought from the northwest via the Panama canal and stored in the pier shed until ships were available for its transfer abroad. Upward of 90,000 tons of flour have been thus stored at one time. The facilities of the terminal have been found to be particularly adapted for the efficient handling of cargo of this nature and it is thought that the capacity of the pier shed, as well as the berthing facilities of Pier B, will be fully utilized for this purpose throughout the life of the Grain corporation. For this usage the war department is reimbursed by the Grain corporation for the storage and berthing facilities occupied. In the meantime, remaining portions of the terminal as may be required by the commerce of Philadelphia are available on a basis of compensation equivalent to similar commercial charges at the port of Philadelphia. The base representing as it does the latest development in terminal engineering offers wide possibilities in meeting the problem of freight handling.

Activities of Business Associations

Boiler Manufacturers

The thirty-second annual convention of the American Boiler Manufacturers' association will be held at the French Lick Springs hotel, French Lick, Ind., May 31-June 2. At this time questions of importance to the boiler manufacturing industry will be brought to attention and discussed. H. N. Covell, 191 Dikeman street, Brooklyn, N. Y., is secretary and treasurer of the organization.

Handling Machinery

The Material Handling Machinery Manufacturers association of New York has elected the following officers for the coming year: Charles F. Lang, Lakewood Engineering Co., Cleveland, president; Rumsey W. Scott, Otis Elevator Co., vice president; Lucian C. Brown, Elwell Parker Electric Co., New York, treasurer; Zenas W. Carter, New York, secretary and manager. The above, together with Fred Stadelman, eastern manager, Wellman-Seaver-Morgan Co., Cleveland, and W. F. Merrill, Lamson Co., Boston, were selected to serve as the executive committee of the association. The newly elected board of governors follows: R. W. Scott, L. C. Brown, Z. W. Carter, Fred Stadelman, W. F. Merrill, F. W. Hall, Sprague Electric Works, New York; H. W. Standart, Northern Engineering Works, Detroit; J. C. Walter, Alvey Ferguson Co., Cincinnati; D. V. Jenkins, Watson Elevator Co., New York; Roy G. Owens, Lakewood Engineering Co.; Thomas Robins, Robins Conveying Belt Co., New York; G. O. Helmsteadter, Hyatt Roller Bearing Co., New York; C. W. Miller, Jeffrey Mfg. Co., Columbus, O. Additional companies elected to active membership were: Whiting Foundry & Equipment Co., Harvey, Ill.; Motors Terminal Co., Cleveland; C. W. Hunt Co., Inc., West New Brighton, N. Y.

Foreign Trade Council

Problems of the new American merchant marine were discussed at the annual meeting of the National Foreign Trade council held in San Francisco, May 12-15. One session was devoted to the American merchant marine. William H. Knox, president of William H. Knox & Co., New York, discussed "American Maritime Policy"; Hendon Chubb, New York, spoke on "American Marine Insurance."

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Bits From the Log of Progress

Events of Interest to Those Engaged in Operating, Constructing and Outfitting Yards and Ships

COX & STEVENS, New York, are at present superintending the construction of approximately 225,000 deadweight tons of vessels of various types, representing an investment of about $40,000,000. The list includes seven 12,000-ton bulk oil tankers, building by the Northwest Steel Co., Portland, Oreg., for the Swiftsure Oil Transport Co.; two 10,500-ton, 13-knot cargo vessels, building by the Chester Shipbuilding Co., Chester, Pa., for Livermore, Dearborn & Co.; two 4800-tons cargo vessels, building by the Union Shipbuilding Co., Baltimore, for the Aluminum Co. of America; a fleet of boats for inland waterway transportation consisting of nine steel towboats, one terminal barge, 40 steel, 20 wooden and 24 self-propelled barges; eight wooden and 21 steel trawlers for the East Coast Fisheries Co.; and the largest steel diesel engine yacht that has as yet been laid down, now building at the yard of Robert Jacob for Vincent Astor. This firm has also recently completed the preparation of plans for altering the following passenger vessels, formerly of German ownership and now owned by the shipping board: CALLOA, FREEDOM, NANSEMOND, ESTEN, AMERICA, GEORGE WASHINGTON, VON STEUBEN.

* * *

THE LORD Drydock Corp., recently incorporated under the laws of Delaware, began the operation of the consolidated plants of the Lord Construction Co. at Fields Point and the Marine Engineering & Drydock Co. at Providence, R. I., on April 1. The two plants will be conducted jointly under the management of H. Donald Leopold, with A. L. Wright as general superintendent. According to Mr. Leopold, with the combined machinery and equipment, any kind of work necessary on vessels of any draft that could come into the port of Providence can be handled. The officers of the new corporation are: F. W. Lord, president; Col. H. M. Waite, Col. Hugh B. Morse and R. B. Roddermond, vice presidents; J. M. Watters, secretary and treasurer.

* * *

ALL BRITISH SHIPYARDS, according to the Guaranty Trust Co., New York, have orders to their full capacity for from two to four years ahead. Ships recently built for Norway on a basis of £25 per ton, with the agreement that all increases of cost, wages, material, etc., subsequent to the contract should be taken care of by the buyers, were delivered at £31 a ton. Eight American vessels of the Robert Dollar type (8800 tons) were recently offered in the British market for $163 a ton. British prices current in February were £31 to £33 a ton. Sales of available ships continue at very high prices.

* * *

DELIVERY RECENTLY of a steamer of 8300 deadweight tons to French interests marks the completion of the fifteenth boat of this class launched by the Canadian Vickers, Ltd., Montreal, in the 13 months following the signing of the armistice. The first two were constructed for Norwegian interests and were of 7359 deadweight tons each. Then came four single-deck screw steamers of 7278 tons for the British ministry of shipping. These were followed by eight steamers for the Canadian government, six of the 2-deck, 8400-ton type and two single deck, 4570 and 4300 tons respectively. During the war this company turned out 24 submarines, 214 motor launches, six mine-sweeping trawlers with a length of 130 feet each and 11 with a length of 125 feet, and 26 mine-sweeping drifters.

* * *

THE U. S.-Mex. Oil Corp. has purchased five tank steamers, built by the Terry Shipbuilding Co., at $225 a ton. The carrying capacity of the five will be 1,500,000 barrels. One of the vessels is to be delivered immediately and the others at intervals of six weeks.

* * *

STEAMSHIP LIBERTY GLO, launched at Hog Island last June, which was badly damaged by a floating mine off the coast of the Netherlands, Dec. 5, has been floated and towed into Rotterdam. The LIBERTY GLO was bound from New York for Hamburg with a relief cargo when she struck the mine. The explosion cut the vessel completely in two, and the two sections went ashore a mile and a quarter apart. A tribute to the strength and remarkable construction of this ship, particularly of the bulkheads, was paid in a letter written by a salvage company of Holland to the builders. The Dutch firm states that as a general rule ships break up or soon fill with water when on the beach of Holland, exposed to the North sea, but the LIBERTY GLO remained practically intact (the aft-part about 325 feet long) after four months' exposure. During one of the storms this winter another new ship, of about the same size as the LIBERTY GLO, stranded some 15 miles from the place where the latter went ashore, and in less than four hours broke in two with every compartment full of water and no chance whatever of salving her.

* * *

CONTRACTS FOR five oil tankers, each of 8500 deadweight tons, have been awarded to the David Rodgers Shipbuilding Corp., Seattle, by the Anglo-Saxon Petroleum Co. of England.

* * *

CONTRACT FOR 16 electric capstans for use on drydocks building for the Emergency Fleet corporation has been awarded to the American Clay Machinery Co., Philadelphia.

* * *

THE SWIFTSURE OIL TRANSPORT CO., controlled by the France & Canada Steamship interests, has just placed with the Northwest Steel Co., Portland, Oreg., contracts for seven 12,000-ton deadweight bulk oil tankers, for approximately $20,000,000, the first vessel to be delivered in December. The vessels will be equipped with reciprocating engines, and will be similar in design to the AMPETCO, owned by the Standard Oil Co. They will be built from plans and specifications supplied by Cox & Stevens, who will supervise the construction at the builder's yard. The tankers will have a speed of 10½ knots at deep load draft, and will draw 26 feet 6 inches. Well known banking interests in New York, Boston and Chicago are represented in the company. Francis R. Mayer, president of the France & Canada Steamship Corp., heads the Swiftsure company.

* * *

CONTRACT FOR the construction of a 13,500-ton oil tanker for Knute Knutsen, head of Norwegian shipping interests, has been awarded to the Skinner & Eddy Shipbuilding Corp., Seattle.

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Bits From the Log of Progress

Events of Interest to Those Engaged in Operating, Constructing and Outfitting Yards and Ships

THE SCANDINAVIAN-AMERICAN line, located in the Washington building at 1 Broadway, New York, for the last 20 years, recently purchased property at the southwest corner of Whitehall and Bridge streets on which it will erect a 7-story and basement fireproof building, 32.9 x 59 feet irregular, at a cost of $150,000. The company will occupy the street floor and basement and special attention has been given in laying out this space to meet present-day shipping office requirements.

* * *

IN SELLING its vessels, the shipping board has just approved a method of payment which differs from any previously employed. The Green Star line purchased five large cargo carriers from the board, LANCASTER, WEST IRMO, WEST ISLAY, WEST CAVANAL and WEST CAWTHORN. These were bought last fall at $220 to $225 per deadweight ton, a total of $10,217,895. Tightening of the credit situation has now led the shipping board to approve a plan under which the line, having already made its initial payment of 25 per cent, will be permitted to pay only the interest for the next two years. The balance will then be paid off in 10 equal annual installments, the entire indebtedness being discharged in 12 years.

* * *

A UNIQUE USE to which flashlights were put has been reported since the rescue of the United States transport POWHATAN, disabled some weeks ago in a severe storm 200 miles off Halifax, N. S. Flooding of the fireroom put the dynamos out of commission, consequently rendering the lighting system useless. With only enough current from storage batteries to use the wireless for emergency, Capt. Albert B. Randall flashed messages in the morse code with a flashlight and received replies in the same manner. Rescue work was greatly facilitated.

* * *

THE LLOYD Royale Belge has recently acquired 10 more freighters of 4000 gross tons each from the United States shipping board, bringing the fleet of the company up to a total of 84. All of the ships were constructed in 1919 and 1920, and one or two have not made their trial trips. The 10 vessels, with their new names under the Belgian flag, are: KNIGHT ISLAND (DEVONIER), LONG ISLAND (ARGENTIER), STATEN ISLAND (SPARTIER), SHELTER ISLAND (LIVONIER), FISHER ISLAND (IONIER), PIQUA (MARCONIER), WAUKESHA (MEISSONIER), MIDDLEBURG (GRENADIER), LYNCHBURG (FUSILIER), AURORA (CARABINIER).

* * *

PLANS FOR constructing an extensive port at Vigo, which is to facilitate the constantly increasing commerce there, have been approved by the Spanish ministry. An issue of a 100,000,000 peseta loan for building the docks, which, it is reported, will be constructed by a New York firm, has been authorized. American financiers are reported to have agreed to subscribe a considerable portion of the loan.

* * *

DESIGNS FOR water wheels and other hydraulic machinery belonging to the William Cramp & Sons Ship & Engine Building Co., Philadelphia, will be used exclusively by the Dominion Engineering Works, Ltd., Montreal, in Canada and the British empire according to a proposed agreement between these two companies. The Engineering company, recently incorporated for the manufacture of hydraulic machinery such as is used by large hydraulic power companies, is to take over the Dominion Engineering & Machinery Co., Ltd., the existing subsidiary of the Dominion Bridge Co. H. Birchard Taylor, vice president of the Cramp company, is a director of the new enterprise.

* * *

STEAMERS YALE and HARVARD have been sold by the navy department to agents of a Los Angeles syndicate, which will put them back on the Pacific coast run, on which they were operating when purchased by the navy. Price for both vessels was $1,755,000.

* * *

NAMES OF several large Cunard liners sunk during the war by enemy fire are to be perpetuated in new vessels under construction.

* * *

OPTIMISM IN balancing estimates of government expenditures against revenues is felt in other countries than the United States. The British ministry of shipping, for instance, has just reported that it exceeded its appropriations for the year ended March, 1919, by £100,000,000. According to the appropriations accounts, the expenditures were £85,000,000 in excess of the estimates, while the deficiency in sums realized on account of appropriations totaled nearly £15,000,000.

* * *

AMERICAN SHIPS now passing through the Panama canal exceed by one-third those of any other nation, according to Governor Harding, of the canal zone. British ships for a long time held the preponderance by more than one-twelfth. Governor Harding urges the United States to keep the ships coming for it cannot afford to put its foreign trade at the mercy of foreign transportation systems.

* * *

THE FAMOUS old ocean greyhound TEUTONIC is for sale. If no other purchaser appears she will be sold to shipbreakers. Built by Harland & Wolff in 1889 and destined to act, if necessary, as an auxiliary cruiser, she was still good enough at the outbreak of the war to be chartered by the admiralty.

* * *

THE LIGHTERS & Transportation Co., New York, has inaugurated a barge line between Troy, Albany and New York at the request of merchants in Troy, Albany and points along the Delaware & Hudson railroad and Boston & Maine railroad. The Troy dock will be at the canal terminal at Liberty street.

* * *

ALLOCATION OF steamers for a proposed Australian steamship service from San Francisco has been approved by the shipping board at Washington. At least three vessels will be assigned to the new service, which is to be inaugurated by the General Steamship Corp., and direct purchase of tonnage is planned.

* * *

FARRAGUT'S FLAGSHIP RICHMOND has been sold to a Philadelphia shipbreaker who has sent her to Eastport, Me., to be beached and burned for the iron, brass and copper in the hulk. The warship was built in 1858 as a first-class sloop-of-war, and is believed to be the first naval vessel to be camouflaged, as she was coated with mud to conceal her presence during the action before New Orleans.

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Activities in the Marine Field

Latest News From Ships and Shipyards

Three Big Lake Trades Handicapped

BY H. C. MEADE

NAVIGATION for the new lake season has been hampered by so many outside conditions that the opening has become one of the most disappointing on record. Lake operators, as usual, had their vessels in first class condition for early sailing. In view of the general industrial demand and the inadequate facilities for handling freight by rail, prospects during the winter pointed to a season of great activity. The only drawback foreseen then was the likelihood of railroad facilities proving unable to handle ore from the docks and coal to the lake ports with sufficient speed to keep the lake fleet fully occupied. This condition has developed to a far greater extent than was feared and coupled with the switchmen's strike has tied up operations at many of the ports. Coal has been so difficult to secure that the vessels have been delayed through inability to obtain fuel. The coal movement to upper lake docks has been very light. Iron ore traffic was handicapped at the start by disturbed labor conditions at upper lake ports and, with these settled, is retarded now by inability of the railroads to keep lower lake docks free for incoming cargoes. The early grain movement was light, the vessels being handicapped in unloading by strikes in Buffalo. As a result of the hindrances to these three principal lake trades, some of the owners have been forced to lay up their boats, after having once placed them in commission. Prospects for a revival of heavy freight movement depends largely upon the ability of the land carriers to resume their normal handling of freight.

* * *

Shortage of fuel is keeping many of the bulk freighters in port and some of the vessels that are in commission may have to be dropped. Bunker coal can be obtained at only a few ports and boats are lined up at these docks waiting for supplies.

* * * *

The steamer EASTON, bound for Montreal with grain, was badly damaged on entering the lock at Cardinal recently. Her rudder was twisted and a shoe was injured.

* * *

Frank Jeffrey, general superintendent of the Detroit Shipbuilding Co., died at his home in Detroit on April 24. He was born in Scotland 60 years ago. For many years he was associated with the American Shipbuilding Co. as general superintendent of its plant at Bay City, and since 1905 has been with the Detroit Shipbuilding Co., which is a subsidiary of the American company.

* * *

Four vessels of the Becker fleet have been renamed. The S. S. CURRY will now be known as the ELMORE, the W. W. BROWN as the BALTIC, the A. G. BROWER as the SARGENT, and the O. P. MILLER as the COLLIER.

* * *

Simon Langell, 84, died recently at his home in St. Clair, Mich. He was one of the oldest shipbuilders on the lakes, and had 40 wooden steamers and a large number of barges to his credit.

* * *

The steamer GEORGE B. LEONARD, which grounded at Buffalo recently, was placed in drydock with eight damaged plates needing repairs.

* * *

The steamer SARNON, formerly the BRITANNIC, went to the bottom at Sorrel recently. She was abandoned by her owners, the Canadian Steamship Lines, as a constructive total loss.

* * *

Capt. Peter McKay of the steamer COLLINGWOOD was recently presented with a gift by the Fort William board of trade. The COLLINGWOOD was the first boat of the season to arrive at Fort William from a lower lake port.

* * *

The steamer MARY GROH has been sold to the Toledo Sand Co., Toledo, by the Lake Erie Sand Co., being delivered at once.

* * *

The steamer MECOSTA will be operated in the automobile trade between Detroit and upper lake ports and Buffalo by Buffalo interests which have chartered her for the season.

* * *

Senator Frank B. Kellogg, of Minnesota, recently introduced a bill in the senate which would allow railroads to own boats on the Great Lakes and along the coasts of the United States. Transcontinental roads could not own lines operating through the Panama canal under the provisions of this bill.

* * *

Charles F. Bielman, secretary and general manager of the White Star line, died at Detroit on April 16.

* * *

Several valuable hawsers were destroyed in a recent fire which did $10,000 worth of damage on the steamer

Detroit River Rules

MODIFICATIONS of existing rules and regulations for navigating lower Detroit river to facilitate the work of widening Livingstone channel, which will be commenced under contract at an early date, went into effect May 15. The regulations are summarized as follows:

Amherstburg Channel Shall be Used By:

All downbound vessels.
All upbound loaded freight vessels.
All upbound light vessels with more than one vessel in tow.
Optional for upbound passenger vessels.
Optional for vessels under 100 gross tons and for vessels making local stops.

Livingstone Channel Shall be Used By:

All upbound light vessels when alone or with but one light vessel in tow.
Optional for upbound passenger vessels, but such vessels are subject to the rules governing this channel.
Optional for vessels under 100 gross tons and for vessels making local stops.
Time interval of five minutes required between vessels, and no vessel to pass another between Bar point light vessel and Ballards reef.

All vessels using Amherstburg channel will enter or leave Lake Erie via channel to east of Detroit river lighthouse. All vessels upbound for Livingstone channel will leave Lake Erie via the channel to the west of Detroit river lighthouse.

CAUTION: Upbound vessels using Livingstone channel will keep well to its westerly side south of Bar point light vessel throughout the vicinity where said channel unites with Amherstburg channel north of Detroit river lighthouse.

Upbound vessels leaving Livingstone channel must proceed above gas buoys Nos. 83 D and 84 D, marking the north end of Ballards reef, before crossing the path of downbound vessels. Downbound vessels have the right of way, but caution is urged.

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F. B. SQUIRE, owned by C. O. Jenkins, Cleveland. The boat itself was not seriously damaged. The cause of the fire, which originated in the dunnage room, is unknown.

* * *

The first commercial cargo to be shipped from Port Clinton in years was carried away on the steamer H. HOUGHTON recently. The shipment comprised 200 tons of plaster and cement for Detroit.

* * *

Capt. James F. Bowen died suddenly of heart failure at his home in Lorain on the morning of April 17. For almost a half century he was a tug and vessel master on the Great Lakes. He had saved 21 lives in or near Lorain and had had a number of medals presented to him in recognition of his bravery. He was a civil war veteran.

* * *

Bodies of five of the crew of the steamer MYRON which was lost last November were picked up recently near Salt point.

* * *

Capt. O. J. Soleau, Milwaukee, was found dead in a Milwaukee hotel April 12. He had attended the Hanna fleet meeting held in Cleveland on April 8 and was on his way to Superior to take charge of the steamer W. H. DONNER of the Hanna line. He had been connected with the Hanna company for a long time.

* * *

Regular service has been established between Buffalo, Cleveland and ports at the head of Lake Superior by the Great Lakes Transit Corp., which will operate 22 steamers for this purpose this season.

* * *

The steamer A. E. R. SCHNEIDER, formerly the CHARLES R. VAN HISE, has been lengthend 96 feet at the Ashtabula yard of the Great Lakes Engineering Works, and her capacity is now 9000 tons. She has recently been floated out of drydock and was fitted up in the river.

* * *

RELIEF, light vessel, has temporarily replaced Lake Huron light vessel. She has a tubular mast surmounted by lantern with gallery; the hull is painted red with middle section white; stack, mast and lantern black. The word RELIEF in black is on each side and the submarine bell will be the same kind as that of the station vessel.

* * *

The barge RICHLAND DAISY has been purchased from the Richland Steamship Co. by Capt. Frank J. Peterson, and will be operated in the coal trade to St Lawrence river ports.

* * *

The Inter-Coast Steamship Co., Boston, is to manage and operate the following shipping board steamers, formerly lake boats, in the New England coal trade this season: NORTHERN LIGHT, NORTHERN QUEEN, NORTHERN KING, NORTHERN WAVE, SENECA and BETHLEHEM.

* * *

Contract for a palatial yacht has been given to the Great Lakes Engineering Works by Horace E. Dodge, Detroit.

Along the Pacific Coast

PREPARATIONS for an exceptional run of salmon have been made by the various canning companies which will operate in Puget sound and Alaskan waters for this is the year when the fish should run in unusual numbers. In some instances, the season's pack has already been sold. The white winged vessels of the various fleets, carrying hundreds of men and fortunes in cannery supplies have been putting to sea for a month. The codfishing fleet is also on its way to Bering sea after an expensive delay. This was due to a difference over wages with the men. The owners threatened to lay up the fleet but a compromise was effected and all the schooners have now gone.

* * *

A tow of unusual length is being undertaken by the staunch steamer ANYOX and the barge BARODA, of James Griffiths & Sons' fleet. These vessels, with 2,000,000 feet of lumber, proceeded to Callao from Tacoma and are now at Panama where they will load a full cargo of railroad equipment for the Alaska engineering commission to be discharged at Seward and Anchorage, Alaska. The ANYOX has won her spurs as a long distance towing vessel. She was designed after ideas of Capt. James Griffiths who has had years of experience in all branches of north Pacific shipping. The course of 1410 miles from Callao to the canal was covered in less than seven days.

* * *

The largest and heaviest snowplow ever shipped to Alaska was taken north on the deck of the steamship SKAGWAY. The machine weighs 80,000 pounds. It was necessary to build a special staging with rails on the deck of the steamer, which was braced and reinforced to stand the strain. At the proper stage of the tide, the big plow was shifted from the railroad switch to the tracks on the vessel's deck. Similar methods will be used in getting the plow ashore at Seward.

* * *

First large shipment of wheat sent from a north Pacific port under private contract since the war will be moved from Portland to Liverpool on a shipping board vessel. For three years foodstuffs have moved as flour under direction of the food administration. This government corporation is busy winding up its affairs in the north Pacific district. It is expected to move about 175,000 tons of flour to Europe during the next month and shipping board vessels are being assigned to this trade as fast as they are available.

* * *

United States engineers have completed the difficult task of clearing the waters of Lake Washington, Seattle, of a submarine forest. When the lake was lowered 12 feet upon the completion of the Lake Washington locks, the tops of the prehistoric trees impeded navigation. More than 100 of these huge trees were destroyed in the last three months by the snagboat vessel SWINOMISH. One of the largest trees was 121½ feet in length and its top was within 4 feet of the surface. The butt of the trunk was 5½ feet in diameter. The entire lake was wire dragged for these obstructions. In most instances the trunks were uprooted by cables and the waterlogged tree cut into sections and sunk in deep water. When it was impossible to pull the trees out, dynamite was used.

* * *

The largest number of passengers to cross the Pacific in one vessel recently arrived at Vancouver when the Canadian Pacific liner EMPRESS OF RUSSIA docked with 1083 travelers aboard. Travel over Pacific routes is exceptionally heavy and the various liners are booked for months in advance.

* * *

The Victoria Whaling Co. has purchased two 14-knot steel whalers in England and is bringing them to the Pacific coast for operation off the British Columbia coast. They are equipped with every modern whaling device.

* *

The Willamette Iron Works, Portland, is building 18 Scotch marine boilers for the Union Iron Works, San Francisco, for installation in vessels under construction in San Francisco. Twelve fuel and water tanks for the steamer FOREST KING, a hull purchased from the shipping board and being outfitted by the Grays Harbor Motorship Corp., are under construction by the Commercial Boiler Works, Seattle.

* * *

Seventeen hundred tons of cargo, consisting of railroad equipment, machinery, leather and other goods, are in storage at Seattle, having been brought from San Francisco. This freight was aboard the Russian steamer ROGDAY, which was damaged in collision at San Francisco. It was consigned to Russia but it is being held until conditions in that country are more settled.

* * *

What is said to be a new Pacific coast speed record for discharging cargo was recently established at Seattle on the Struthers & Dixon steamer DEUEL. This liner brought 7700 tons of freight from the Orient and the entire cargo was discharged and stored in the transit sheds in 40 working hours, or at the hourly rate of 147½ tons. The record is the more noteworthy because 5400 tons consisted of vegetable oils, which come in packages difficult to handle.

* * *

Because of difficulty in obtaining sailors and the requirements of the seamen's act calling for 65 per cent of certificated seamen, several lumber laden sailers, bound for offshore ports, have each been delayed for from ten days to two weeks. Operators of lumber carriers are unanimous in stating that provisions of the act work an expen-

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sive handicap while failing to bring about any good results.

* * *

Regular service to the Columbia river has been announced by the Toyo Kisen Kaisha, beginning in July. Monthly sailings have been promised for the purpose of moving 45,000 tons of phosphate rock which have been bought for shipment to Japan. Negotiations are under way for shipping 100,000 tons additional through Portland where bunkers are under construction for handling this cargo in bulk.

* * *

Inauguration of service between Puget sound and River Plate ports will take place in May when the shipping board steamer PALLAS, built at the Todd yards, Tacoma, sails from Seattle with 1,750,000 feet of lumber, completing her cargo at San Francisco.

* * *

For $475,000, the wooden motorship BOOBYALLA, built by Patterson & MacDonald, Seattle, has been sold by J. E. Chilberg to the Pacific Freighters Co. The vessel is carrying a cargo of lumber from Vancouver, B. C. to Chile.

* * *

Three motor driven vessels, the RUBY, BENDER BROS. and KAMCHATKA have been dispatched from Seattle to ports in the Arctic and Siberia where they will trade during the season. These vessels are carrying valuable cargoes to the Far North. Later in the summer, the RUBY will make a trip to Herschel island and Banksland under charter to the Hudson Bay Co. The rate paid is the highest on record, 4½c per pound for weight cargo and $2.25 per foot for measurement.

* * *

Free pilotage has been inaugurated on the British Columbia coast as far as the federal government is concerned. This announcement is the result of six months of friction between the pilots and the government. Formerly the pilots worked under a fee system and maintained two stations where men were constantly on watch. Finally the government marine department decided to take over the service and the disagreement arose over the price to be paid for the pilots' equipment. The result is that the regular lines are employing their own pilots.

* * *

The steamer WESTWARD HO is enroute from Baltimore to Portland and Puget sound to inaugurate the intercoastal shipping board service under management of the Pacific Mail Steamship Co. It is expected that this line will be permanently established as there has been an urgent demand for months for connections with Atlantic ports.

* * *

Grays Harbor is contemplating extensive harbor improvements and on June 26 a special election will be held to vote on the issuance of $800,000 in bonds for this work which will be done under the supervision of the Grays Harbor port commission.

* * *

While the movement of railroad ties to Great Britain has been discontinued for the present, because the last of the orders of last year have been shipped from the Columbia river, additional contracts for 38,000,000 feet have been booked. This cargo will move during the summer and fall from Puget sound and Columbia river mills, and will require about 20 vessels.

* * *

Nearly 100 motor seine boats, formerly employed in Puget sound waters in fishing, have been sold to California for use in the tuna fisheries off San Pedro. These small craft have safely weathered the open sea and have negotiated the 1200 miles in safety.

* * *

Interruption of cable communication with the Orient is seriously handicapping commerce with Japan and China. Delays are of great length sometimes being from 10 days to two weeks whereas before the war messages between Pacific ports and Tokio went through in from 30 minutes to three hours.

From East and South

SIX shipping board steamers have gone to the Inter-Coast Steamship Co., Boston, for management and operation. They are the NORTHERN LIGHT, NORTHERN QUEEN, NORTHERN KING, NORTHERN WAVE, SENECA and BETHLEHEM. The vessels will continue in the New England coal trade, according to Capt. Arthur Crowley, president of the Inter-Coast Co.

* * *

The Hartford & New York Transportation Co. resumed navigation between Hartford and New York about the first of April.

* * *

The torpedo boat destroyer SICARD was launched April 20 by the Bath Iron Works, Bath, Me. The boat was named in memory of Rear Admiral Montgomery M. Sicard, veteran of the Civil and Spanish-American wars, and chairman of the strategy board of the navy department in 1898.

* * *

Thousands of cattle will be shipped to Belgium from Boston during the coming year and a number of large freighters are to be specially fitted for the service. In addition to cattle, the ships will carry quantities of coal from Baltimore and Norfolk for Antwerp and Rotterdam.

* * *

The big steel oil tanker, DIRIGO, commanded by Captain Peterson, and built by the Texas Steamship Co., Bath, Me., arrived direct from Antwerp to undergo repairs at the plant of her builders. The DIRIGO is the first of the fleet which it is expected will be brought there for repairs by the Texas Steamship Co.

* * *

The 2-mast schooner MYSTERY, which left Gloucester, Mass., for Boston April 6 with a cargo of fish was abandoned by her crew after she was struck on rocks in the outer harbor of Salem, Mass.

* * *

The new shipyard at Squantum, Mass., to be taken over by the government shortly, will be known as the United States destroyer and submarine base, according to an official announcement made at the navy yard, Boston.

* * *

Capt. John M. Emery, Hoboken, N J., and others have bought the Starin dock and other property in New Haven, Conn., owned by the John H. Starin estate, together with the freight steamers YORK and HAVEN, which have previously been run on the Starin New Haven line, between New Haven and New York. The New York terminus will be Pier 41, North river.

* * *

The ALBANIA, recently launched from the yards of the Scotts Shipbuilding & Engineering Co., Greenock, Scotland, will be put into service between Portland, Me., and St. Lawrence river ports, according to information received at the Portland office of the Cunard line.

* * *

The 2-mast schooner ELLA F. CROWELL, built at East Haven, Conn., 56 years ago, and which has been engaged in service between Rockland, Me., and Boston, has been sold by the Rockland & Rockport Lime Co. to an interest in Nassau, Bahamas, and will probably be placed in the cocoanut or pineapple trade of those islands.

* * *

The 4-mast SPINDRIFT, the largest schooner ever built at Machias, Me., was launched March 31. The sponsor was Elsie May Ingalls, daughter of Charles Ingalls, the master builder of the craft.

* * *

The Texas Steamship Co. has announced its program of sending all vessels for repairs, except in the case where drydocking is necessary, to the Bath, Me., plant. This means that a large force of mechanics will be kept at work much of the time on repair work in addition to the regular building program for new vessels.

* * *

Canadian-Vickers, Ltd., Montreal, will launch six standard vessels of over 8500 tons each in the near future. Two of these, the TITIANA and the LOCKLEE, built for the Norwegian government, are ready for launching at present.

* * *

Simultaneously with the departure of the newly repaired and refurnished steamship CAMDEN, for points in Maine, the Eastern Steamship Co. announced extensive resumption of steamship service, including the daily Boston-New York trip which began April 16. The CAMDEN will have three sailings a week from Boston to Bangor, Me.

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Practical Ideas For The Engineer

How Underwater System of Signaling is Employed as Aid to Navigation With Recommended Installations on Great Lakes

BY HERBERT R. SIMONDS

OWNERS of Great Lakes vessels have been studying recently the question of underwater signaling. Practical use of this system was made last season and in the past months a group of lake operators has made an intensive study of installations on ocean going ships and along the Atlantic coast. Lack of stations along the Great Lakes has proved a serious handicap and efforts are being made to have submarine bell signal stations built along the lakes as aids to navigation. A petition is being circulated among the masters of Great Lakes vessels calling for the placing of stations at various points on Lakes Superior, Michigan, Huron and Erie. The selection of the points has been agreed upon by a committee of 14 captains representing various prominent lake lines. The list compiled for each lake is shown in the accompanying table. The numbers representing the relative importance of the different points, *1* being considered the most urgent, *2* the next, etc.

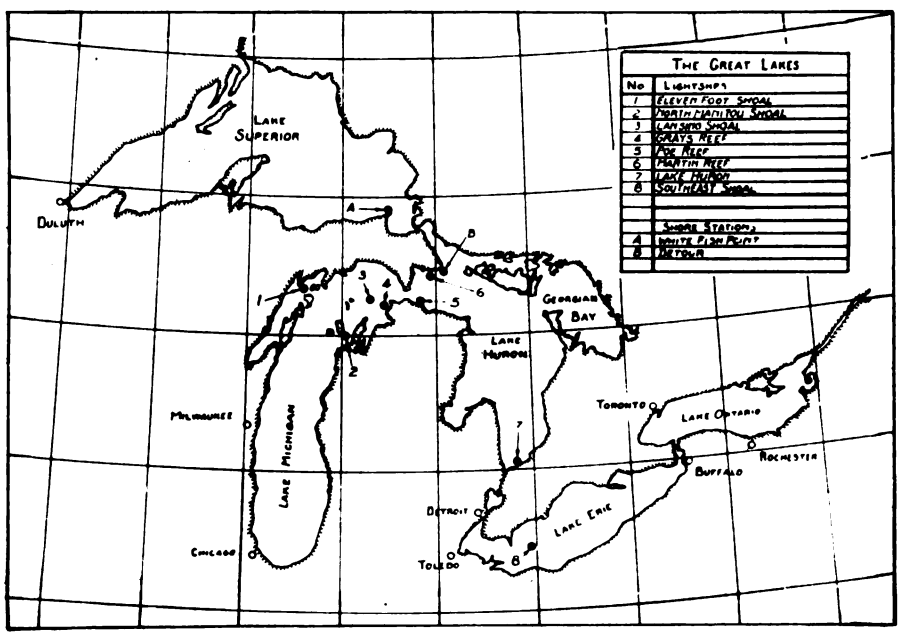

FIG. 1—TEN SUBMARINE SIGNAL BELL STATIONS HAVE BEEN PUT INTO SERVICE ON THE GREAT LAKES AND ARE NOW OPERATED BY THE GOVERNMENT

The question of underwater signaling has been under investigation for over 20 years by the Submarine Signal Co., Boston, but it has only been in the last few years that any extended and serious action along this line has been taken. The device being used at present consists of a metallic bell, of a design similar to that shown in Fig. 4, provided with some sort of mechanism for striking the bell and producing vibrations. A brief description of this bell and its use appeared in the February issue of THE MARINE REVIEW.

The bell as employed in signaling is submerged from 20 to 30 feet below the water surface and its vibrations then extend through the water in all directions and can be picked up by proper receiving devices at distances up to 10 or 15 miles. The vibrations travel and are received entirely independent of any weather conditions.

Bells are usually employed at dangerous points on travel routes. They are carried by lightships or, as shown in Fig. 3, on a tripod on the ocean or lake bed some distance out from the shore lighthouse. The location of submarine bells already installed and operated by the government on the Great Lakes is shown in Fig. 1.

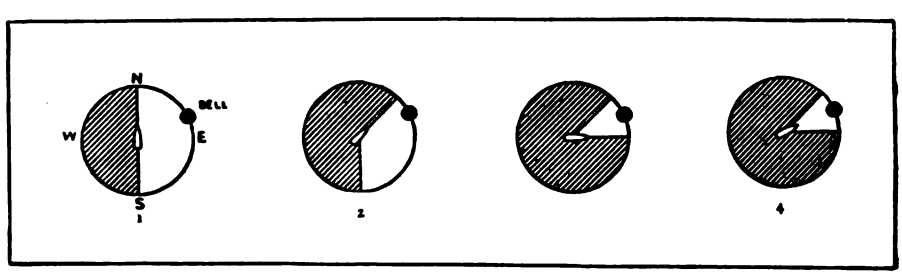

FIG. 2—IN FINDING DIRECTION FROM A BELL SIGNAL, A VESSEL TURNS TOWARD THE BELL UNTIL THE SOUND IS RECEIVED AT EQUAL INTENSITY ON BOTH SIDES, AT WHICH POSITION THE BELL IS DEAD AHEAD

As a rule, vessels carry only the receiving apparatus, but it is possible to include in the equipment a signaling bell which can be lowered over the side of the vessel from a davit and thus provide an emergency means of signaling from one boat to another. It is necessary for a vessel to carry a receiving apparatus in order to be able to hear the signals which emanate from the bell stations. This apparatus as has been described in an earlier issue consists of duplicate sets of microphones mounted in water chambers just inside the steel shell of a vessel below the water line and near the bow.

The system of wiring for a receiving set is shown in Fig. 5. By throwing the small switch at *2* to port, the starboard set of microphones is thrown in circuit with the ear pieces, *1*, and the semaphore, *6*, indicates starboard. Conversely when the switch is thrown in the opposite direction, the port side microphones are thrown in circuit with the ear pieces. The switch, *3*, is inserted in the circuit for the purpose of throwing either the *A* set of microphones, shown at *4*, or the *B* set shown at *5*. Thus by means of the switch at *2*, a comparison may conveniently and instantly be obtained between the intensity of signals coming in at the starboard side and that of signals on the port side. By means of the switch, *3*, a comparison may be obtained between the two microphones on either side. This latter switch is to guard against any defect

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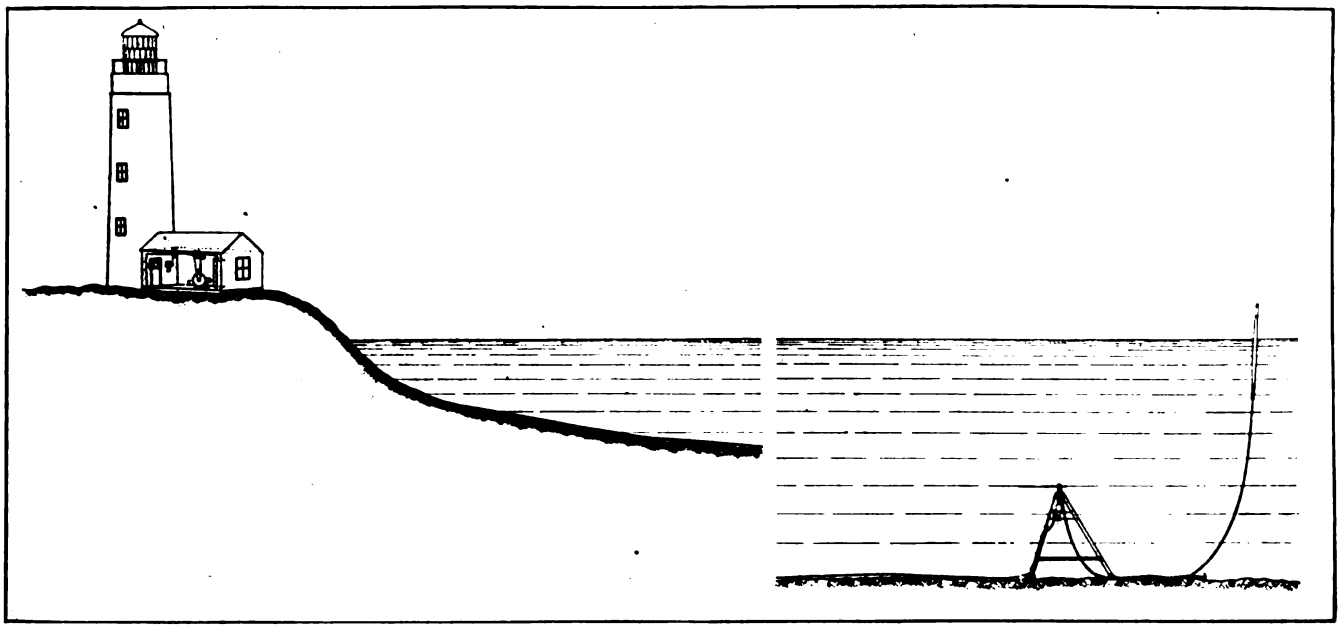

FIG. 3—ELECTRIC SUBMARINE BELL WITH ITS SUPPORTING TRIPOD IS PLACED FAR ENOUGH OUT FROM SHORE SO THAT ITS LOW WATER DEPTH IS FROM 25 TO 30 FEET

in the instruments, and to give double assurance concerning the signals received.

When making an observation for direction, instructions are to listen alternately on port and starboard sides by throwing switch 2 first in one direction and then in the other. If the bell sounds louder when the semaphore indicates port, the bell is on the port side or if louder when the semaphore shows starboard, the bell is on the starboard side. To obtain the exact bearing the vessel is turned toward the bell until the sound is equal on both sides at which time the bell will be dead ahead of the vessel.

In Fig. 2 is shown the maneuvering of a boat when finding direction. In passing a bell, the sound will increase in volume and improve in quality of tone as the bell is approached. It will be loudest when the bell lies almost abeam, and will decrease as the ship travels away. Masters readily become accustomed to this peculiarity and, therefore, are often able to determine their approximate position without altering their course.

The Submarine Signal Co. plans to install bells at Ashtabula and either Chicago or Duluth, this year. It is going to place one of the new oscillators which can be heard for 40 miles at Whitefish point, and will take the bell there now to Chicago or Duluth.

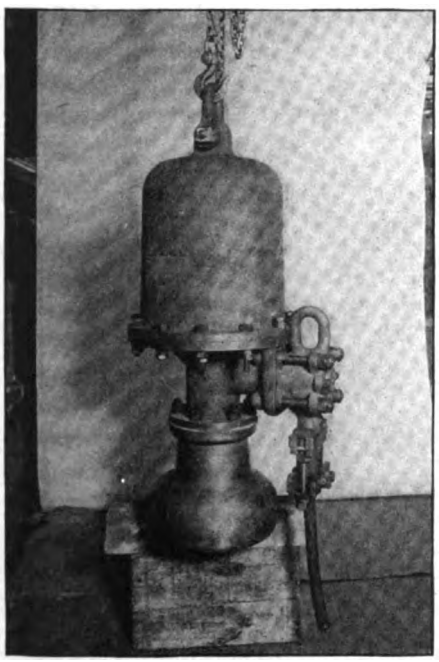

FIG. 4—ELECTRIC SUBMARINE BELL ADAPTED FOR HANGING ON TRIPOD PLACED ON LAKE OR OCEAN BED

Proposed Lake Aids

LAKE SUPERIOR

Duluth, located E. x S. ½ from Duluth light, 4 miles off piers.
2, Devil island, north 1 mile from light.
5, Michigan island, S. S. E. 2 miles.
Eagle harbor, N. W. 2 miles (sand hills).
1, Manitou, E. 1 mile off light.
Caribou island, S. W 3½ miles (Canadian).
3, Passage island, S. E. ¾ S. ½ mile.
Rock of Ages, N. W. 1 mile.
Thunder cape, S. 2¼ miles (Canadian).
Marquette, about W. by S. 1 mile from light.
Two Harbors, S. E. about ¼ mile.
Huron islands, N. ½ mile.

LAKE MICHIGAN

5, Milwaukee, light vessel.
Cana island, E. 1 mile.
4, Gull island, E. by S. ½ S. 2 miles from St. Martin's light.
Twin river, E. 1 mile.
2, Peshtigo reefs, light vessel.
Big Sauble, W. 1 mile.
Point Betsey, W. 1 mile.
1, Dumping ground off Chicago E. by S. ½ S. 7½ miles. There should be a light vessel and submarine signal here.

LAKE HURON

1, Thunder bay, S. E. 2 miles.
2, Presque isle, N. E. 1 mile.
Sand beach, E. 1 mile.
Cove island, W. 6 miles or where gas buoy is located.
Graham shoal, off outer dock S. by E. ½ E. 3¼ miles.

LAKE ERIE

2, Erie (Peninsula light) N. 1 mile.
1, Long point, S. 1¾ miles (Canadian).
Fairport, right off breakwater.
2, Point Abino, S. 5 miles (Canadian).
1, Ashtabula, right off breakwater.

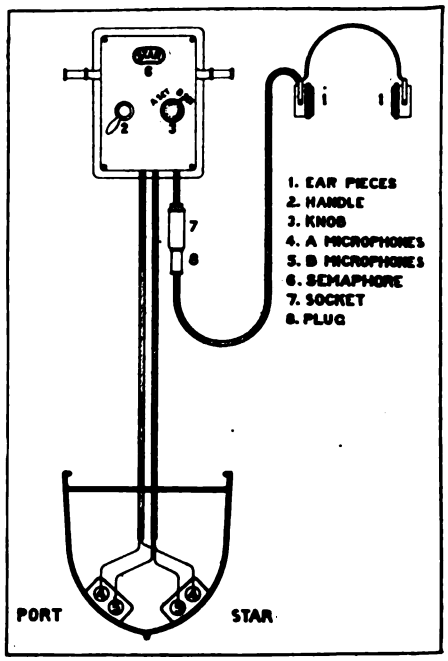

FIG. 5—BY MEANS OF TWO SWITCHES IT IS POSSIBLE TO LISTEN FOR VIBRATIONS RECEIVED BY MICROPHONES ON BOTH SIDES OF A SHIP

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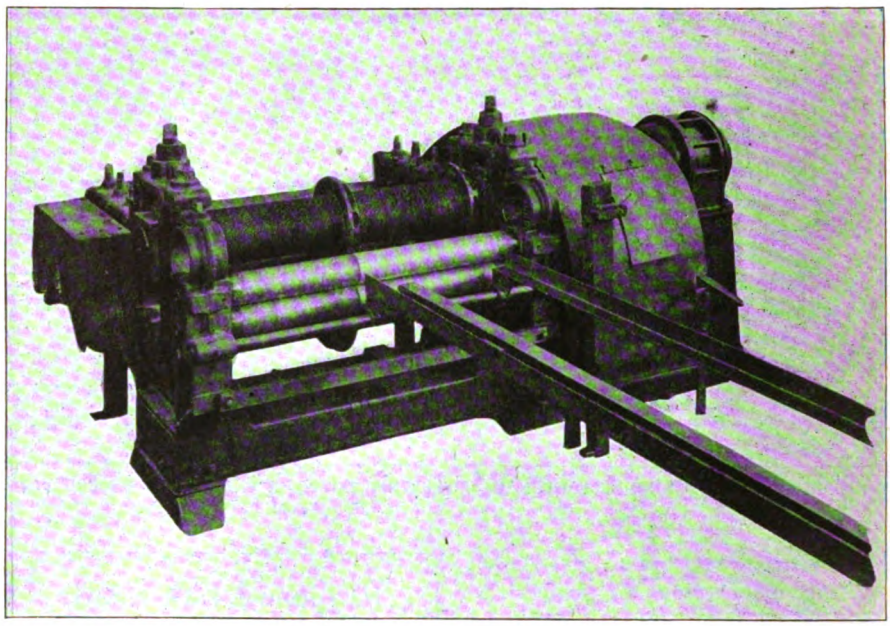
Equipment Used Afloat, Ashore

Machine for Cutting and Leveling Sheet Metal Strips

CUTTING sheet metal into strips for various manufacturing uses is sometimes an expensive process in which the results obtained are not always satisfactory. In some cases, the edges of the strips are not parallel which necessitates another trimming operation. To overcome these difficulties and to provide rapid means for cutting sheet metal into strips, the Yoder Co., Cleveland, recently designed the unit shown in the accompanying illustrations.

These machines are made in several sizes to accommodate various widths and thicknesses of metals. The machine shown below is the regular size while at the right is a heavy duty machine. With adjustable cutters, strips 2 inches and wider can be cut on all machines designed to accommodate ⅛-inch metal. When the metal is thicker than ⅛-inch, 3 inches is the smallest width that can be handled. Where narrower strips are required, solid cutters and spreaders are used.

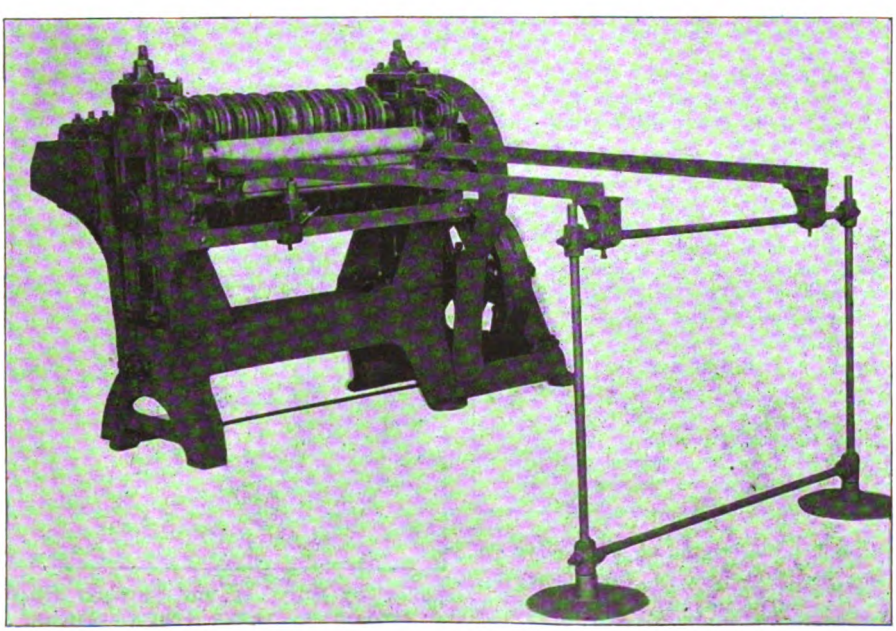


HEAVY DUTY TYPE OF MACHINE FOR CUTTING METAL STRIPS

The machine is equipped with long guides at the entrance side which keep the metal straight as it is fed between the rolls that carry it to the cutters. These rolls also keep the metal in a horizontal position while it is being cut. Guides are provided between the feed rolls and the cutters to insure the proper entrance of the sheet. The slitting cutters are so arranged on the shaft that stretching of the edges of the strips is overcome. This feature, it is pointed out, will keep the strips from winding.

Cutters are tool steel and segment shaped, each being half a circle. They are fastened securely to a cast iron hub, threaded for its entire length. As the hub is threaded also, this feature insures a positive grip since the two sections of the hub are drawn tightly together by bolts. This arrangement provides a bearing on the entire circumference of the shaft and also permits the cutter heads to run without wobbling. The threaded shaft also provides a ready means for adjusting the cutter heads for close measurements.

Finger guides are arranged immediately after and to the side of the cutters between which the slitted strips pass to a pair of rolls which remove all burrs. Then the metal passes through a series of straightening and leveling rolls. The machine is said to be economical in operation as it does not require the services of a highly skilled mechanic to operate it.



ROTARY CUTTER UNIT FOR SLITTING SHEET METAL

Late Marine Patents

Copies of any one of these patents can be obtained by forwarding 25 cents in stamps to Siggers & Siggers, patent attorneys, National Union Insurance building, Washington, and mentioning THE MARINE REVIEW.

1333783—Ship salvage device, Michael Selwinski, Plainfield, N. J.

1333799—Airplane speed boat, Roy N. Doney, Auburn, N. Y.

1334194—Leak stopper for vessels, Platt B. Viele, Rochester, N. Y.

1334349—Ship, F. H. Clark, New York, and Morris M. Whitaker, Nyack, N. Y.

1334445—Landing stage for vessels and land vehicles, A. Gaffney, New York.

1335072—Boat, Arthur L. Nichols, St. Louis, assignor of one-half to Edwin B. Meissner, St. Louis.

1335278—Marine transportation vessel, William T. Donnelly, Brooklyn, N. Y.

1335518—Submarine boat, Harold E. Montague, New York, assignor of one-half to E. A. Fritze, Philadelphia.

1337920—Torpedo capturing and destroying net, Ernest Kohler, Alameda, Cal.

1336075—Lifeboat davit, John J. Eglit, New York.

1336226—Sailboat, John H. Hart, Bennington, Vt.

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1336287—Submarine vessel, George Dorffel, Oakland, Cal.

1336688—Stabilizer for boats, John J. Ferko, Cleveland.

1336770—Arrangement for driving ships' propellers, C. L. H. Wittmaack, Zehlendorf, near Berlin, Germany.

1336866—Vessel, John H. Schlueter, Cincinnati.

1336873—Firing device for submarine mines, torpedoes, or the like, N. W. Uhr, Gottenberg and Johan Hjalmar Sandberg, Stockholm, Sweden.

1337035—Salvage boat, Jonathan Begg, Oakland, Cal.

1337250—Apparatus for raising sunken vessels, H. M. Meguerditchian, Green Island, N. Y.

1337442—Means for propelling and steering ships, C. de Cazen, Montreal, Que.

1337960—Aero submarine torpedo, Edward A. Rider, Westbury, N. Y., assignor of one-half to Lilian R. Mosher, Westbury, L. I., N. Y.

1337747—Marine vessel, Joseph Batorfy, New York.

1337283—Device for locating sunken ships, Gregor Alexovits, Guttenberg, N. J.

1337601—Ship salvage device, M. Hyszka, Myrtle Point, B. C.

1336872—Liferaft, John F. Twigg, San Francisco.

Business News for the Marine Trade

Contracts have been let by the Spencer Turbine Co., Hartford, Conn., for erecting a 1-story building, 60 x 120 feet. Erection of another structure also is planned.

Wilcox, Crittenden & Co., Inc., Middletown, Conn., manufacturers of marine hardware, recently purchased 25 acres at Portland, Conn., on a portion of which they plan to erect a modern foundry.

Bibbins-Fillette, New York, has been incorporated to manufacture compasses with a capital of $10,000, by T. G. and M. A. Fillette, 135 West Forty-seventh street, New York, and R. E. Bibbins.

Capitalized at $200,000 the Hillebrandt Steamship Co., New York, recently was chartered by T. G. Low, G. Kimball and O. A. Lawrence, 2474 Marion avenue, New York.

Plans have been prepared for the erection of an addition to the foundry of the Harrison Safety Boiler Works, Norristown, Pa. The extension will be 25 x 48 feet.

Erection of a shop building, 1-story, 45 x 100 feet, is being planned by the American Marine Equipment Co., 1064 East Grand street, Elizabeth, N. J.

Construction of five shop buildings is being planned by the Boat Repairing Corp., Jersey City, N. J.

Work has started on the construction of a new plant for the Evinrude Motor Co., 279 Walker street, Milwaukee.

Extensions and improvements to its plant at Kingston, Ont., are being planned by the Collingwood Shipbuilding Co. These include the construction of a 750-foot drydock.

Andrew Wallace of the Wallace Shipyards, Ltd., Vancouver, B. C., is having plans prepared for the construction of a floating drydock, to be built at an estimated cost of $400,000.

J. Coughlan & Sons, Ltd., Vancouver, B. C., recently were incorporated to take over the plant operated by J. Coughlan & Sons, to operate drydocks, graving docks, shipbuilding plants, etc. The company recently received a contract from the Canadian government to build a drydock at Vancouver. The new concern is capitalized at $3,000,000 and the directors include John J. Coughlan, David A. McDonald, Alexander C. Desbrisay and others.

The Boston Engineering Co., Inc., Boston, recently was incorporated with a capital of $200,000, to build boilers, etc., by Charles L. Service, Wollaston, Mass.; Starr Parsons, Lynn, Mass.; G. P. Bremmer, E. G. Innis and C. T. M. Perley.

The Clayton Ship & Boat Building Corp., Clayton, N. Y., has been incorporated with $250,000 active capital, by C. R. Chapman, E. A. McDonald and C. J. Parker Jr., Syracuse, N. Y.

Erection of a foundry, 80 x 200 feet, is being planned by the Pennsylvania Pump & Compressor Co., Easton, Pa.

The coal handling crane at the United Coal & Dock Co.'s dock at Milwaukee, recently was damaged in a windstorm and will have to be entirely rebuilt.

Capitalized at $10,000, the Marine Sales Corp., Brooklyn, N. Y., recently was incorporated by J. A. Davidson, M. T. Rochford and C. T. Hotchkiss, 51 Clark street, Brooklyn, N. Y.

The Advance Boiler Corp., New York, has been incorporated with a capital of $500,000, by T. and G. W. Moffitt and J. J. Schmitt, 337 Second avenue, New York.

Fire extinguishers, etc., will be manufactured by the Canbec Mfg. Co., Attleboro, Mass., which was recently incorporated with a capital of $50,000, by Joseph Stanislaus, Beauregard, Mass., Arthur Laberge and Charles M. Robbins.

Payne-Dean, New York, recently was incorporated to make valve control apparatus with a capital of $5000, by P. T. Dean, B. B. Hodsman and J. A. Kienle, 18 East Forty-first street, New York.

Engines and boilers will be manufactured by the Mande Corp., New York, which was recently chartered with a capital of $32,500, by C. A. Brodek, H. Brill and F. L. Haver, 44 Cedar street, New York.

The Fitzgibbons Boiler Co., Oswego, N. Y., has been incorporated with a capital of $100,000 by W. Craemer, H. Rowland and J. Janotta, 17 Battery place, Oswego, N. Y.

The Globe Shipbuilding & Drydock Co., Baltimore, has started work on a $5,000,000 drydock. The plant, which will be located on a 30-acre tract, will include two ways, a floating drydock and several shop buildings, the largest to be 140 x 365 feet.

The Port Engineering Works, shipwright, Brooklyn, N. Y., recently was incorporated with a capital of $5000, by T. Didonna, M. Cavallo and M. Solomon, 266 Humboldt street, Brooklyn.

Plans are being prepared by the Automobile Boat Co., 407 Shubert building, Philadelphia, for the erection of a new plant. Edward S. Napoli is president of the company.

The Reihl-Johnson Mfg. Co., Pittsburgh, has been organized to manufacture iron and steel specialties for marine service and to operate a general repair plant for marine work. The works will be located on Third avenue at Block House way, Pittsburgh. The company is headed by J. L. Reihl and A. J. Cox.

The Odin Construction Co., Titusville, Pa., manufacturer of boilers, tanks and stacks, is planning the erection of an addition to its plant to be built at a cost of $60,000. H. A. Curtis is secretary of the company.

The British syndicate which proposes to erect a drydock at Louisburg, N. S., at a cost of $5,000,000, is applying to the government for permission to start construction. Representatives are F. T. Green, 50 Bold street, Warrington, England, and Engineer R. H. Cooper, Sydney, N. S.

Benjamin A. Lowe, 38 Payton street, Providence, R. I., and others, recently organized the Narragansett Boiler Works, 281 Dyer street, Providence.

Capitalized at $20,000, the Austin Motor Fittings Co. recently was chartered at Plymouth, Conn.

The Darling Pump & Mfg. Co., Williamsport, Pa., has had plans prepared for the erection of two 2-story plant additions, both to be 40 x 100 feet.

Erection of an addition to its foundry is being planned by the Hayton Pump & Blower Co., Appleton, Wis.

Erection of a machine shop, 30 x 39 feet, is being planned by the California Boat Building Co., Los Angeles.

J. N. Young, 1416 Standard building, Vancouver, B. C., is offering for sale the entire works of the Coquitlam Shipyards. In addition to the shipbuilding plant, the works consists of a sawmill, woodworking shops and other structures, and is equipped with a complete line of pneumatic tools.

David Rodgers, Seattle, has closed contracts for ten 10,000-ton steel tankers for the American Fuel Oil & Transportation Co., New York. It is also reported that a contract for 10 additional steel steamships has been taken. A company known as the Rodgers Shipbuilding Co. has been formed and yard No. 2 of the Skinner & Eddy plant has been taken over. About 6000 men will be employed and construction of the ships is expected to be started within the next 60 days.

The Northwest Steel Co., Portland, Oreg., has sold its shipbuilding plant to the Northwest Bridge & Iron Co. Contracts recently awarded the former company for seven 12,000-ton steel tankers were also taken over.

The navy department, Washington, is arranging for additions and improvements at the League Island navy yard, Philadelphia. The estimated expenditures are placed at $17,268,360 and this amount has been incorporated in the naval bill. Of this sum, $11,000,000 will be employed for construction and repair work; $2,500,000 for steam engineering service; $780,000 for ordnance and $1,000,000 for supplies.

Capitalized at $30,000, the Continental Radio & Electric Corp., New York, recently was incorporated to manufacture electric apparatus for wireless operations, etc., by G. E. Burghard, J. F. Grinan and F. di Blasi, 6 Warren street, New York.

Charles Cory & Son, 290 Hudson street, New York, recently was incorporated in Delaware with a capital of $1,850,000 to manufacture engine bells, nautical instruments, precision equipment, etc. A 6-story plant, 140 x 175 feet, is being erected at King and Varick streets, New York, at an estimated cost of $200,000.

A steamship line to be known as the Gulf-Oriental Steamship line is to inaugurate regular sailings from Galveston, Tex., to various ports in the Far East, under authority from the United States shipping board, according to an announcement by F. A. Lallier, manager for S. Sgitcovich & Co., Galveston steamship agents. Shipping board vessels will be allocated for this service. It is expected sailings will be started about Sept. 1. Cargoes of cotton and general merchandise will be carried.

The Pacific Mail Steamship Co., San Francisco, according to an announcement, plans to extend its Baltimore line service to Seattle, with W. R. Grace & Co. as Puget Sound agents. The new service will furnish the first regular sailings to and from ports on the Atlantic coast to Seattle since shortly after the United States entered the war, when the American-Hawaiian Steamship Co. withdrew from the route. A monthly service will be maintained by the new line and it is expected the first sailing will be made the first part of this month.

The Tonawanda Navigation Co. recently was incorporated in Delaware with a capital of $275,000, by Harold V. Williams, Louis E. Krumhols and A. L. Dunn, New York.

Capitalized at $250,000, the Ship Propulsion Corp. recently was chartered in Delaware by M. L. Horty, M. C. Kelly and S. L. Mackey, Wilmington, Del.

A drydock project involving an expenditure of $3,000,000, sponsored by Fraser, Brace & Co., Montreal, Que., will be built on the Delaware river front in Camden, N. J., if the city council agrees to strike the river ends of two streets from the municipal plan. The building of the drydock involves the construction of a series of barracks and homes for more than 500 workmen. The company is said to have obtained a 90-year lease on the site, which extends along the

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Business Changes

Frederick J. Benjamin, until recently advertising manager of the Milwaukee Western Fuel Co., Milwaukee, has established an advertising agency with temporary offices in the Wells building, Milwaukee. Mr. Benjamin will specialize in the preparation of advertising copy and campaigns for business and engineering papers. He has had a wide experience in this line of work.

The Harrison Safety Boiler Works, Philadelphia, which for many years was a co-partnership, has been reorganized and incorporated as the H S B W Cochrane Corp. The corporation takes over the entire business of the former firm. The management of the company, including the engineering, manufacturing and selling organization of the Cochrane line of steam specialties, remains unchanged. Joseph S. L. Wharton is president, John C. Jones, vice president and general manager; William S. Hallowell, secretary and treasurer; Horace E. Sibson, general sales manager, and Axel B. Wallem, general works manager.

The Titusville Forge Co., Titusville, Pa., has opened a district sales office in the Commercial Trust building, Philadelphia.

The Foundation Co. is now located in its own building at 120 Liberty street, New York.

The American Salvage Co. has moved its office from 115 Broadway, New York, to 15 Exchange place, Jersey City, N. J.

The Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has established a branch of its marine department in its sales office at 165 Broadway, New York, which will make a specialty of advising the shipping industry in the selection of ship propulsion machinery. Frank F. Boyd and Norris R. Sibley are in charge.

The Inter-Colonial Steamship & Trading Co. recently moved into new office quarters at 198 Broadway, New York.

Pierce J. McAuliffe, consulting engineer, has moved his office from 55 Liberty street to Whitehall building, 17 Battery place, New York.

The Reeve Shipping Co., 42 Broadway, New York, has established branch offices at 209 South La Salle street, Chicago, and 53 State street, Boston. The company calls attention to its free service department for the benefit of manufacturers desiring information concerning possible customers for American products in foreign countries.

river front for 1000 feet and is 1570 feet deep. In event the city refuses to comply with the company's request to vacate the streets, it is said the company will build its plant at Chester, Pa.

Harold V. Williams, Louis E. Krumhols and A. L. Dunn, New York, recently were named as the incorporators of the Arapahoe Navigation Co., and the Muscoota Navigation Co., which were recently chartered in Delaware, the former with $275,000 capital and the latter with $400,000.

A direct freight and passenger service between ports of Norway, Sweden, Denmark and San Francisco, will be installed shortly by the Norway Pacific line, according to an announcement by Fritz Olsen, San Francisco, Pacific coast manager for the line. Mr. Olsen is to sail for Norway in June to complete arrangements for initiating the monthly schedule of sailings. The fleet will consist of motorships. Two will be 7500 deadweight tons and two 3000 deadweight tons.

The Oconee Steamship Co. recently was incorporated in Delaware with $1,000,000 capital, by Robert K. Thistle, A. Roy Myers, and Raymond J. Gowan, New York.

Harold V. Williams, Louis E. Krumhols and A. Weil, New York, recently were named as the incorporators of the Jeannette Steamship Co., $2,500,000 capital; the East Port Steamship Co., $1,750,000 capital; the Caremania Steamship Co., $1,500,000 and the Neuse Steamship Co., $1,000,000, all of which were recently chartered in Delaware.

Capitalized at $150,000,000, the Garland Steamship Corp. recently was incorporated in Delaware, by T. L. Croteau, M. A. Bruce and S. E. Dill, Wilmington, Del.

John Reid & Co., New York, recently was incorporated with a capital of $500,000, to engage in the manufacture of marine engines, etc., by J. Reid, A. J. Michel and C. H. Lane, 607-A Halsey street, Brooklyn, N. Y.

With a capitalization of $1,000,000, James W. Elwell & Co., a copartnership for years, recently was incorporated under the laws of New York. Howard E. Jones, is president; Harvey G. Perine, vice president; R. Joly, treasurer, and R. W. Swanson, secretary. The company, which has been in business since 1821, now owns two steamers, having sold several of its fleet recently.

To finance the completion of three vessels under construction at the plant of the Groton Iron Works, Groton, Conn., the Emergency Fleet corporation has agreed to advance the company $1,000,000. This is the amount needed to conclude a construction program at the company's yard, which is more than 90 per cent complete.

The Great Lakes Coal & Dock Co. has purchased a site, 400 x 900 feet, on the North Menominee canal at Twentieth street, Milwaukee, on which it is reported planning to build a dock with a storage capacity of from 275,000 to 300,000 tons. O. S. McFarland, 822 First Wisconsin building, Milwaukee, is engineer is charge of the project.

The Federal Shipbuilding Co., Kearny, N. J., has broken ground for the erection of a 2-story plant addition, 50 x 250 feet, to be built at an estimated cost of $40,000.

The Norfolk Shipbuilding & Dry Dock Co., Norfolk, Va., is reported planning the erection of a number of new plant buildings, including a large machine shop.

An agreement to sell the shipyard of the Groton Iron Works, Groton, Conn., to Charles W. Morse, has been reached by the shipping board, which holds a mortgage on the property for $1,716,000.

Capitalized at $50,000, the Atlantic Coast Shipping Co., Inc., Boston, recently was incorporated by H. W. Chandler, B. M. Eaton and N. J. MacGaffin.

J. F. Duthie & Co., Seattle, shipbuilders, have the contract for repairs and alterations to the Japanese-built shipping board vessel EASTERN CROWN, on a bid of $65,450.

The National Transportation Co., Pittsburgh, recently was incorporated for $250,000 and took over the fleet used by the United States government at Nitro, W. Va., including the steamer WINEFRED. The fleet consists of barges, dredges and derrick boat equipment. The company, of which George Whyel is president, Charles F. Colbert Jr., vice president and general manager, and F. E. Weddell, secretary and treasurer, will do commercial towing, dredging, construction and general river transportation business, giving special attention to the purchase of coal and coke loaded in barges for resale in Pittsburgh harbor and southern river points.

In order to provide for the construction and repair of steel steamships, the Beaumont Shipbuilding & Dry Dock Co., Beaumont, Tex., will install approximately $100,000 worth of additional machinery, all of which has been ordered; will build a marine railway to handle tugs and other light craft for the wood ship department and will equip a barge with air compressors, forges, etc., to repair vessels not requiring drydocking. J. W. Link is president of the company.

Capitalized at $100,000, the Steamship & Shipyards Equipment Corp. recently was incorporated in Delaware by Harold V. Williams, Louis E. Krumbols and A. Weil, all of New York.

The plant of the Crisfield Shipbuilding Co., Crisfield, Md., recently was damaged by fire, the loss being estimated at $45,000. The fire is said to have resulted from the explosion of an oil stove. The office building, warehouses and machine shop of the plant were the most badly damaged.

New Trade Publications

ROPE.—Rope for marine use is described in pamphlets now being distributed by the Whitlock Cordage Co., New York. Details of a large contract supplied the navy department, covering more than 1,400,000 pounds of cordage, ranging in size from ¼-inch diameter to 10-inch circumference hawsers are presented. In the second pamphlet, a complete manila rope schedule is described, giving information regarding sizes, weights, lengths, strengths and costs per 100 feet at various base prices.

WELDING TORCHES.—Principles of torch operation and construction are discussed in a new catalog just issued by the Air Reduction Sales Co., New York. Two types of welding torches are described and illustrations showing the torches, angles of heads, tips, etc., are presented. Tables are included showing the thicknesses of metal that can be welded by the different tips, giving also the pressures required, speed of welding in feet per hour, and gas consumption in cubic feet per hour.

STEAM SEPARATOR.—Steam leaving a boiler carries more or less moisture. In passing through the piping, the steam loses heat so that the amount of moisture is increased by the condensation. Some of this moisture collects in the piping while a portion is carried along in the steam current. Water in steam reduces the power production of steam engines or turbines about 2 per cent for each 1 per cent of moisture. This catalog describes a steam separator installed near the engine or turbine to stop and collect all water. Centrifugal force is used to separate the water from the steam. The unit has been described in an earlier issue of THE MARINE REVIEW.

PNEUMATIC TOOLS.—Planers driven by compressed air and adapted for shipyard service are described in catalogs just issued by the Turbine Air Tool Co., Cleveland. One 9-pound model, widely used in shipbuilding work during the war, consists of a tool steel cutter head, with a turbine attached to either end, hung on ball bearings in an aluminum frame which resembles a jack plane. The air is controlled by a valve in the handle. This tool is used for planing decks, outsides of hulls, for finishing spars, outboard dubbing, joining and finishing work on wooden ships and for finishing decks, cabin floors, wooden partitions and other wooden parts on steel vessels.

ELECTRIC SUPPLIES.—Material manufactured by the Benjamin Electric Mfg. Co., Chicago, is thoroughly described and illustrated in a new catalog now being distributed. The line includes industrial lighting fixtures and reflectors, wiring devices, special fittings, industrial signals, etc.

HAMMERS.—The line of hammers manufactured by the David Maydole Hammer Co., Norwich, N. Y., are described in a recent catalog. The foundation of the line by David Maydole in 1831 is described. A complete line of handled hammers is fully described and illustrated.

PUMPS.—Single stage and multistage types of centrifugal pumps for a variety of services are described in a new catalog being distributed by the De Laval Steam Turbine Co., Trenton, N. J. The types described include those for marine service. The catalog discusses the design, construction and operation of each type. Manufacture is on an interchangeable basis, facilitating the installation of repair parts. The catalog is well illustrated. It includes tables and formulas for calculating horsepower, efficiencies, friction in pipe lines and the readings of Venturi meters.

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